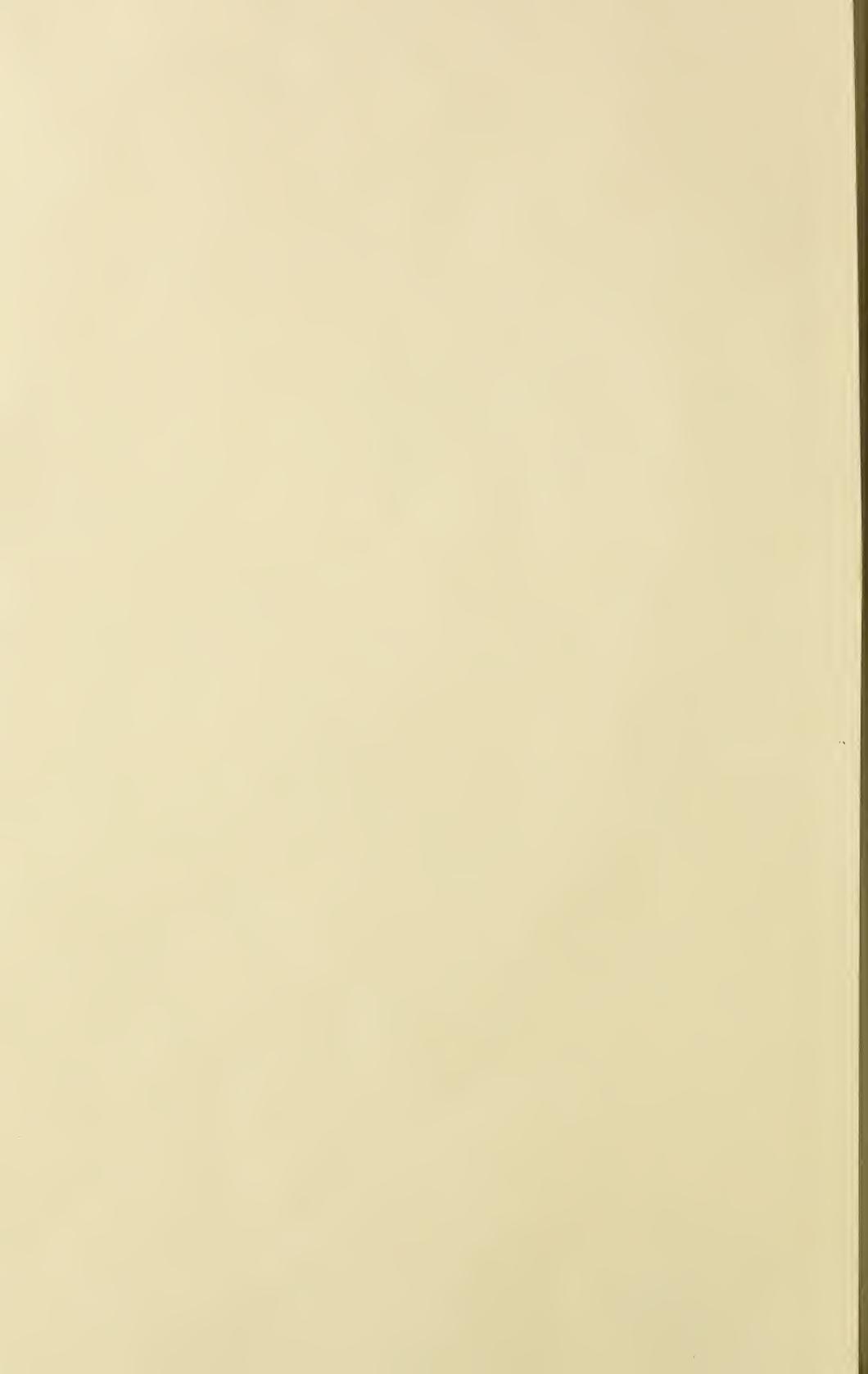


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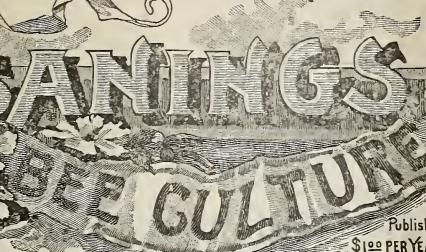
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GLEANINGS UP A JOURNAL DEVOTED TO BEES, AND HONEY, AND HOME INTERESTS.

ILLUSTRATED SEMI-MONTHLY

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MY OBSERVATION has been that, in a good year, a large part of the queens will be superseded, and but few in a poor year.

B. C. HUGENTOBLER writes: "Sweet clover yielded two tons for me, while the severest drouth of years was upon us." Just like sweet clover.

I'M GLAD you're going to do some more cellar wintering, Mr. Editor. That may be a real benefit to some of us who wish we could winter outdoors but can't.

W. Z. HUTCHINSON has my hearty congratulations. To have those twin daughters married to two young men whose lips are never defiled by tobacco, whisky, or profanity, is something to be profoundly grateful for.

THE EGG of a queen-bee, according to German bee-journals, weighs $\frac{1}{6}$ of a milligram. According to that, 170,097 eggs weigh an ounce, and 2,721,552 weigh a pound. If a queen lays 3000 eggs in a day, it takes her 8 weeks to lay an ounce.

CARBOLINEUM ought to be fine for bottom-boards. It would keep away the large wood ants that make bottom-boards dangerous in moving, for they honeycomb them, leaving a mere shell. What's the cost? [I have not yet obtained the price, but I understand it is less than that of paint.—ED.]

F. BEUHNE, in *Australian Bee Bulletin*, says that, when he has in a nucleus a queen more than two years old, he gives a cell in a protector, leaving the old queen in the nucleus, and in three cases out of four the young queen will begin laying without disturbing the old one, when the young queen can be removed and another cell given.

I DON'T UNDERSTAND, as you do, that J. S. Wise, p. 861, daubed the queen with honey, but that he put her back in the cage and then plugged the cage with soft candy. That would be all right. [You are right.

I misread Mr. Wise. But my advice in the matter of daubing queens was all right, even if I did shoot clear over the head of our querist.—ED.]

IMBEDDING WIRE in foundation, says M. F. Reeve, in *Amer. Bee-Keeper*, works better if the board on which the foundation is placed be first covered with burlap, or with tapestry carpet reverse side up. [I suppose this is to prevent the marring of the cells of the foundation, because the board has a hard and unyielding surface; but if imbedding is done as it ought to be, by means of electricity, it will make no difference what sort of backing is used.—ED.]

COLOSSAL LADINO is the name of a new white clover originating in Germany, and well spoken of in *Revue Internationale*. It winters well, does well on poor soil, is larger every way than common white clover, and yields about 70 per cent more green fodder and 38 per cent more dry fodder than the common. [Why, see here; here is a little gold-mine. I am interested, as I am sure all American bee-keepers will be. Now, Dr. Miller, can you not arrange for us to get some of that seed?—ED.]

DR. PACHNER says 1000 drones consume a little more than 4 oz. daily. That means that the drones reared in 28 square inches of comb will, in 5 weeks, consume about 9 lbs. of honey. [This is interesting and valuable, and, moreover, it has a most practical bearing, because, many times, bee-keepers are careless in allowing a considerable quantity of drone comb to be in the brood-nest. Assuming that the brood-nest is broken open only once during the height of the season, it will be possible for a large quantity of drone brood to mature and hatch out drones. The wise bee-keeper will look to his profits by preventing this waste of energy and loss of what might otherwise be surplus honey.—ED.]

DR. B. F. JONES, in *Review*, quotes from GLEANINGS, p. 522, "When one practices clipping for a series of years he will be surprised how many colonies he will come across that have changed queens unbeknown to him," and takes that as proof that clip-

ping has caused the death of the queens! Why, bless your heart, doctor, in the natural course *every* queen is superseded, clip or no clip, making a fourth to half the queens in an apiary superseded every year. [This is a good point well made, but I should not have thought of it. This illustrates the importance of having a prominent apicultural writer almost constantly working with the bees during the height of the season, so that he may be able at once to recognize truth from fallacy in deductions.—ED.]

MR. EDITOR, on p. 850 I committed Doolittle to your tender mercies, and then you proceed to let him alone and to go for me. Bless your heart! I didn't say it was a possibility, easy or hard, to have 108,000 bees the progeny of one queen. Go for Doolittle. [Why, bless your heart, doctor, Bro. Doolittle was as much on my side of the fence as on yours; in fact, I claim that, if you had not read him with slant-eyed glasses, you would have seen he was, if any thing, more on *my* side of the fence. Mr. Doolittle is no doubt laughing in his sleeve over the rumpus that he has unwittingly kicked up between us. We may yet have to call on him to explain what he did mean, and thus settle the row. Well, he is respectfully requested to do so.—ED.]

"LAST WINTER," says A. C. Miller in *Amer. Bee-Keeper*, "I had two colonies, each in a ten-frame Dovetailed hive with a half-story full of sawdust over the enameled mat, and the whole hive from the under edge of cover to the ground surrounded by a single thickness of tarred paper." They wintered so finely that he will repeat the experiment on a larger scale. [In packing hives for outdoor wintering, experiments have shown that a good generous supply of packing material over the top of the broodnest is much more important than around the sides. Of course, it is desirable to have it all around the hives—top, sides, bottom, and ends. We have had reports where whole apiaries have wintered outdoors by simply having the upper story packed with packing material; but better results are secured, of course, by packing all around.—ED.]

"IT MIGHT not be a bad idea for each annual convention to nominate three candidates for General Manager, and nine candidates to succeed the three directors whose terms expire with the following December." That's a suggestion of Editor York as to the future. [I do not believe it would be wise to bring about conditions or a precedent whereby the office of General Manager, at least, should be changed as often as once in two or three years. When we get a good man, as in the case of our present General Manager, we ought to hang on to him. One who has been in the harness, and knows how to pull, should not be made to give place to one who may be merely popular in the eyes of bee-keepers or members of the Association, and yet possibly be entirely unfitted for the exacting and important du-

ties of the office. But I do believe Bro. York's suggestion is all right for the Board of Directors. Some of us who have been so long on that Board could just as well get out, and thus place the responsibility for the success of the organization on other men whose help we need.—ED.]

I WANT to say, in language somewhat emphatic, that some better way should be provided than to have Directors' meetings that keep Directors out of the sessions of the annual convention of the National. It isn't fair to the Directors; and if they are good for any thing it isn't fair to the convention. [You are right; but the time of our national conventions is so much taken up by general convention work that it is often difficult to squeeze in a little side-committee work between the sessions. I think the time will have to come when the Directors will have to consult by letter, and that the discussion of some of these questions will have to be done through correspondence. Such a plan is unsatisfactory, in that it gives the chairman of the Board almost exclusive power to direct, if he chooses, the work of the entire Board.* If he suggests, for instance, that such and such a thing ought to be done, and gives his reasons therefor, in the absence of any counter-argument his proposed policy is sure to carry, when it may not always be wise.—ED.]

CUT-OFF TOP-BARS spaced endwise have been condemned by some, and I have wondered why. H. H. Hyde now says, p. 857, that the staples are continually driven further in. Surely I shouldn't like that. I think I have used them about as long as any one, and I find them a boon. It is much easier to handle the frames than with long top-bars glued at each end. Not a staple has ever been driven further in, to my knowledge. But my end-bars are $\frac{1}{8}$ thick, and



top-bars $\frac{1}{8}$ thick; so the staple is driven through the end-bar into the top-bar. What is really wanted—I've hankered after it for years—is a spacer that can't be driven in more than the right depth, say a nail with a head $\frac{1}{4}$ inch thick. If that can't be got, why not a shouldered staple? I can't understand Mr. Hyde's saying the staples become a ball of propolis. Propolis is so bad here that a Hoffman frame is a nuisance; but there has been no trouble with propolis on the end staples. [I take it that staples do not push in with (you even without the shoulder) under the projections of the top-bar; but what you desire is something that can be used as spacers between the bars. If there were demand enough to warrant it we could make staples shaped as in the diagram you have made, and the expense would be insignificant; indeed, an order for 100 lbs., sent to the wire-goods people, would bring the desired article, and at a price within the range of all bee-keep-

* I speak from an experience based on the time I was Chairman of the Board; and at that time I saw how easy it was to get indorsed any plan I had.

ers, I suspect. Mr. Hyde's experience, as related by him, is quite unusual; but I did find this in California, that the short top-bar was objected to because there was not handle enough to handle the extracting-frames by. This is because bee-keepers making that objection have not become accustomed to handling brood-frames at the corners, or, rather, at the intersection of the end of the top-bar and the top of the end-bar.—ED.]

HALF THE TIME to election has expired since the Buffalo convention, and there has been some talk in the bee journals, but not a candidate named. Wake up, Mr. Gleanings; name the Directors whose term expires in December, and then name candidates for their successors. Editor York says, "Suppose a hundred members nominate as many different candidates." Well, that will be better than no nominations. [At the suggestion of Mr. O. O. Poppleton, of Florida, I would nominate a capable and honest gentleman, and one who is greatly interested in the success of the Association, Editor H. E. Hill, of the *American Bee-keeper*, Fort Pierce, Fla. He would represent a good portion of the South. Then I would respectfully make mention of another, Mr. Wm. Rohrig, of Tempe, Ariz. Arizona is one of the great territories for the production of honey, and should not be ignored in the representation of our Board of Directors. Mr. Rohrig came all the way from Tempe to Buffalo, a distance of 2500 miles, to attend the meeting of our Association; but owing to a railroad wreck he just barely missed it. A man who has such an interest in our organization, and who went paying his own way, ought to be honored with an office in the Association. There are two of the old Directors, A. I. Root and myself, who, when our terms of office expire, desire to drop out and let the two gentlemen named be nominated in their stead.—ED.]

I AGREE with you, Mr. Editor, page 862, that 10 lbs. sugar and 10 or 11 lbs. water would make 14 lbs. sealed stores, and just because of that I wouldn't have very late feed so thin as two of sugar to one of water, but five of sugar to two of water, which would make 14 of syrup from 10 of sugar. I've fed barrels of it that way. [I should rather hesitate about feeding bees sugar so thick as a proportion of 5 to 2, because that surely would not give them an opportunity to invert the syrup. The chances are limited enough with 2 to 3. One year when we fed syrup as thick as honey we had a loss the following spring that was the heaviest we have ever known. Some of the syrup turned back to sugar, and that sugar was shoved out of the entrance of those colonies that survived. Whether the food was responsible for it or not I am not able to say; but of this fact I am sure: That a thin syrup, about like raw nectar, which the bees can invert, is far to be preferred to thick, which they can not change in their most wonderful of all laboratories to a food that

has been digested, or partially so, at least. Prof. Cook, at one time, was almost persecuted for advancing the "heresy," as it was then called, of "digested nectar." While the term, perhaps, may have been unfortunate, yet he struck at a grand truth; and the foundation of that truth is that honey, having been predigested by the bees, is far more easily assimilated than the ordinary cane sugars of commerce. Bee-keepers, I believe, can not make too much of a handle of this point. Slowly and surely the great physicians are waking up to this fact, and are urging the consumption of honey rather than the sugars of commerce. Pardon me for making so much of a side point not directly suggested by your Straw; but I propose to "harp" on it, and keep on harping, until our friends, the great consuming public, will begin to recognize the fact, and thus shall we be able to open up a new avenue of trade never before known.—ED.]

FROM THE biological standpoint the bees are doing their natural work in visiting blossoms; and, in spite of what harm they do, they are necessary to the best results in our orchards.—*Editorial in Farmers Review*. [This is only one out of a thousand favorable comments that have been coming right straight along from sources that are in no way biased, because they have no connection with bee-keeping. It is a pleasant and interesting fact that the great outside world of intelligent farmers and fruit-growers now recognize the almost indispensable office of the bee in bringing about the perfection and full development of certain plants and fruits.—ED.]



Nature slowly sinks to rest;
Fields and trees are bare;
Bees rejoice within the hive
As their common wealth they share.

A writer in the *Bee-keepers' Record*, in speaking of an easy and quick method of destroying bees when it is necessary, as in the case of foul brood, says:

Close the doors, separate two frames, and push between them a little tow, cotton, wool, or shaving. On this pour a tablespoonful of bisulphide of carbon: drop a lighted match on the tow, and immediately cover up with the quilt. The unfortunate bees will be dead in less than a minute. When the light is applied there is a slight explosion, but nothing alarming, only care must be taken to hold one's head away from the top of the hive.

A year ago a friend from New York tasted some alsike-clover honey here. Last summer he wrote he had been tasting that honey, in imagination, ever since, and ordered a gallon, then four gallons for another party, who says, "Never tasted anything like it—can't get such honey here."

Send . . ." The result is, the supply is about all gone. These parties would not have hesitated to pay 20 cts. a pound there for such honey, and, in fact, it did cost them about that.

A few days ago a friend from a neighbouring town in this county was taking dinner with the writer. We had some of that identical alike honey on the table, and he was as much pleased with it as were the New York parties; but he was surprised at its cheapness, 10 cts., and said he wondered why folks in his town would pay 25 and 30 cents a pound, as they do, for comb honey, when 10 cents would get so much more. He took a gallon. Each one can make his own moral from this.



AMERICAN BEE JOURNAL.

In regard to unqueening too soon, Mr. York says:

Quite a number of beginners in bee-keeping make a big mistake when, after they have ordered queens from a dealer or breeder, they immediately kill the queens of the colonies where they wish to introduce the new queens when they arrive. This is a risky and unnecessary thing to do. Never destroy a reigning queen until the queen sent for is received. Very often queens can not be sent by return mail, even if so advertised. A breeder may be able to send by return mail almost invariably, but more than likely the bee-keeper who has been so hasty as to kill the old queen before the new one arrives is so unfortunate as to have the mailing of his queen unavoidably delayed several days or a week. Even a queen-breeder can not control all circumstances at all times. So the safest way is to wait until the new queen is on hand, then proceed to remove the old queen and introduce the new one according to directions.



The editor pleads for a careful discrimination in the use of the words "stand" and "colony." He says:

A reputable journal has so many times used the word "stand" when "colony" was meant that it can hardly be otherwise understood that such use is approved. The word "stand" having a specific use in bee-keeping as designating the thing upon which a hive stands, its use in another sense serves just as much for confusion as for variety. Is there any argument for the use of "stand" when colony is meant, that will not equally support the use of "hive" in the same way?

While the word "stand" may at times be used for "hive," the word "swarm" should certainly be applied only to a colony of bees when swarming. As well might we call a thousand men in the street a "regiment" when they are not organized as such. Yet here comes a writer who speaks of the bees he put into the cellar Nov. 20 as good *swarms*, when he never saw a swarm that month. I feel sure that more than half the writers on bees use "swarm" for "colony;" and at times we are utterly at a loss to tell which word to use, as one might be as good as the other. But the outside world will probably always speak of a hive of bees as a swarm; and in doing so it nearly follows the German custom of using the word *Schwarm* loosely.

for any collection of bees; also the French *essaim* and Spanish *enjambre* in the same way. As illustrative of how the gentiles get things mixed, I will mention that the editor of a Coshocton, O., paper, a little south of us, saw a hive of bees from the Root Co., *en route* for the South, at their station. He makes some ado over it, but calls it a hive of *queens*.



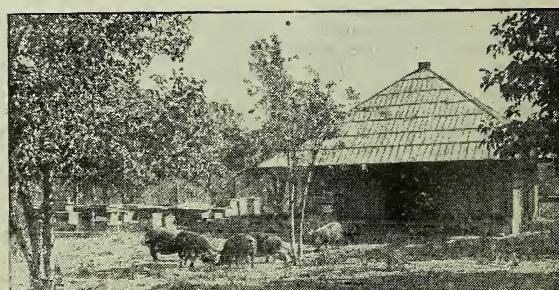
RAMBLE 194.

A Visit with Mr. O. W. Stearns, of San Joaquin Valley, Cal.; How Mrs. S. Managed to Make the Foundation-mill Work; Continued from Last Issue.

BY RAMBLER.

When Mr. Stearns purchases as apiary, if it is in a good location he usually secures the right to keep the bees there. Such a purchase and such a right he secured from Charley Williams, in Tulare Co. This was an excellent bargain for Mr. Stearns, for, adjoining the apiary, is an adobe honey-house, and a charming place in which to run an extractor on a hot day. The walls are a foot thick, and the openings on the four sides are covered with wire cloth, and all can be used for doors or windows as desired. The shake roof, instead of resting on the walls, is elevated with studding some 18 inches above the walls, and that space entirely around the building is covered with wire cloth, giving plenty of air. The roof terminates in a point, as shown in the photo; and instead of a chimney, as you might think from the appearance, that is a square ventilating-hole through which the bees escape, and it is at such an elevation that robber bees never try to enter it.

When I visited the apiary with my camera there was only a portion of the family at home; and the pig portion was so familiar that a hatful of pears from the adjoining



AN ADOBE HONEY-HOUSE.

trees had to be thrown down as an inducement for them to pose for a photo. They fulfilled their part admirably. The pigies are fairly good for the destruction of weeds, and do not molest the hives.

Mr. Stearns and I could not agree on the subject of hives. He uses a half-inch side and the attendant weewaw. I called attention to one hive with a piece split out to a loose knot. You could almost chuck your fist through it.

"Oh! that's nothing," said Mr. Stearns.

He then related an incident where an old gunny sack had been thrown on to a bush. A swarm of bees had taken possession of the limb under it, and made it their home. I told Mr. S. that he had better adopt that sort of hive in the future. It would be nearly as good as the half-inch hive.

"Much better," said he, "than the Heddon hive. Nobody but the veriest cranks use that and the Hoffman frame."

If Mr. S. purchases an apiary in which are Hoffman frames, out comes the jack-knife and off come the spacing sides to the frame, or, as he terms it, he cuts off their ears.

When buying bees, Mr. Stearns has occasion to move many colonies. His moving plan is very simple. He drives into the apiary after dark, and just loads the hives right on without fastening the covers or stopping the entrances. Of course the bees cluster to quite an extent on the outside of the hives. "But what is the harm?" says Mr. S.; "they will get back again when the wagon stops." He had moved bees over sixty miles; was two days on the road, and every colony arrived at destination all right. During the day the wagon and its load were left alone, and the bees went to work without much confusion.

When Mr. Stearns first came to California he worked his bees for comb honey, as did nearly every bee-keeper in this valley; but owing to low prices there has been a revolution, and extracted honey is now almost exclusively the product. A good share of the crop comes late, and Mr. S. cited an instance where a colony with only two frames of brood on the first of June built up and produced 64 lbs. of comb honey. Quite a few bee-men claim that only half of the crop is secured up to Sept. 1; but this is a varying condition, owing to climatic changes.

Mrs. Stearns and the two daughters are quite an important factor in Mr. Stearns' prosperity. They can nail hives and crates as dexterously as a professional carpenter; dip wax, roll foundation, and, if the rush of the season demands, they can work the extractor.

It is right that Mr. Stearns should be

proud of his helpers, for they have helped him to lay by many dollars. For instance, Mr. Stearns needed a new foundation-machine, and sent to The A. I. Root Co. for one. In due course of time it arrived all-right, and as bright as a new dollar, and Mr. Stearns proceeded to roll some foundation; but he found it one thing to proceed,



"NONSENSE! YOU STAY RIGHT HERE; I'M GOING TO WIN THAT NEW DRESS!"

and quite another to roll. Although he was already an expert at the business, all of his experience was thrown away upon this machine. After repeated efforts it would not work. Mr. S. evidently became nervous. Almost anybody would in such a case. Mrs. Stearns heard unusual sounds in the shop. She knew right off something was going wrong, and she presented herself before her husband. His hat was off, hair tousled, sleeves rolled up, a frown upon his usually placid brow, and "his mouth was drawn down at the corners."

"Why, Orville! what is the matter?" said she, as she beamed kindly upon him.

"What is the matter, hey? Why, Anna, this machine a'n't worth a—a—" He was going to use a real bad word, but a better spirit prevailed, and he said, "It a'n't worth a row of pins. I'm going to send it right back to the Root Co. Why, they don't know how to make a mill that will work. The good-for-nothing mangy thing!" And he looked as though he could kick the machine and the Root Co. into the middle of next week.

"Well, Orville," said Mrs. Stearns, "men are always impatient. Now, I believe I can make that machine work. The rolls look so nice, bright, and perfect, that I believe it will work—it *must* work."

"See here, Anna," said Mr. Stearns,

and there was less hardness in his voice. "I'll tell you what I'll do. If you will make that machine work all right I will buy you a new dress."

"All right, Orville," said Mrs. Stearns; and she went into the house and soon returned with a box of pearlina and a stiff scrubbing-brush. "Now you see, Orville, you men don't know how to scrub things. Those rolls may have had oil or acid on them, and it must be scrubbed out."

So Mrs. Stearns went at it with hot water and cold, and, after a long scrubbing, the sheets of wax were tried again, but the machine would not work.

"There, Anne, I told you the measly thing wouldn't work. I'll send it right back to the Roots;" and he grasped the screwdriver to loosen the mill from the table. But Mr. S. didn't reckon right. That promise of a new dress, and a woman's will, had that machine in hand, and the hot water and pearlina were again applied with more vigor than ever. Scrub, scrub, scrub. Mr. Stearns stood first on one foot and then on the other; pulled his mustache occasionally, and lent a helping hand now and then. But Mr. Stearns suddenly remembered something.

"Oh! say, Anna, there is the mail train. I must go to the postoffice."

"No, you don't, Orville. You have got to stay right here and see this thing out. In the words of General Grant, 'I'll fight it out on this line, if it takes all summer.' I am bound to have that new dress. I'm just thinking it will be brown alpaca, made up biasing."

The machine was all ready for the wax again. It was tried, and the trial was a failure. Scrub, scrub, scrub, hot water and cold.

"Oh! say, Anna, what in the name of common sense is the use of scrubbing the thing any more? Why, you'll wear the thing out, and then the Root Co. will not allow me any thing if I return it; but if you have got to scrub, I'll go and feed the chickens. I've clean forgot them."

"Here, Kitty," said Mrs. Stearns, "you stop nailing hives, and feed the chickens. Your pa wants to stay and help me."

"Scrub, scrub, scrub, hot water and cold. All the forenoon the exercise continued. Mr. S. was clear out of patience, times without number; but finally, just before dinner-time, after an unusually long scrub and strong scrub, the machine was tried, and, to the surprise of Mr. Stearns, and the gratification of Mrs. S., the sheet went through like a charm, and sheet after sheet followed in quick succession.

"There, Orville, I told you so," said Mrs. Stearns, waving her scrubbing-brush in triumph. "Now, my dear Orville, this evening we will consider the new dress."

Of course, Mrs. Stearns received the dress. It was a good one; and now whenever the machine has a tantrum Mr. Stearns knows who can scrub it into good behavior. In fact, an energetic "Mrs." to mind the

house and the husband is something I would heartily recommend to quite a number of bachelor bee-men in California.

[I especially indorse your last sentence, Mr. Rambler; but why not practice your own preaching? How you Western bee-keeper bachelors (and there are many of them) can get along and keep house, and find things when you are in a hurry, without a "Mrs.," is beyond my comprehension. Why, when my "Mrs." is gone for only one week things get all mixed up, somehow.

Mrs. Stearns has our thanks for vindicating the Root Co. by demonstrating that the machine was all right; but perhaps the "Mr." did not read the directions thoroughly.

But, say; Mr. S. does something that many of us can not do, even if he can't handle Hoffman frames or run a foundation-machine; and that is, haul a load of bees without shutting up the hives. I am not sure but if we went at it right, we might do it too.

As to those Hoffman frames, I suggest that he give his wife a chance to show him how to use them. She would earn the dress. —Ed.]

DO QUEENLESS BEES PREFER TOO OLD LARVÆ FOR QUEEN-REARING?

Some Final Conclusions.

BY DR. C. C. MILLER.

Last year I attempted to get an answer to this question. I think the result was conclusive; but Hon. R. L. Taylor thought the position of the combs was such as to favor starting queen-cells from the younger brood. This year I thought I would make the test in such a way that no such objection could be made. At the same time I simplified the question put to the bees, putting it in this form:

"Which do you prefer for queen-rearing, a cell in which an egg was laid not less than six days ago or one in which an egg was laid not more than four days ago?" Or, assuming that the larva hatches from the egg in three days, the question would be, "Which do you prefer, a larva three days old or one 24 hours old?"

July 16th, at 10 A.M., I took from a nucleus the only comb it had, which comb we will call comb *a*. The queen in the nucleus had been laying about a week, and during that time had been confined to one comb, so I could be morally certain that eggs had been laid just before removal. The comb was about two-thirds filled with brood and eggs. I put it in an upper story of a strong colony over an excluder, along with other unsealed brood that had been there for some days, a feeder being on top, so that it would be well cared for.

July 18th, at 10 A.M., I took from a nucleus (in which was my best queen) its two

brood-combs, and gave it a comb that had not been with a queen for more than a week. It had a few cells of sealed brood, and its cells were well polished, ready for immediate use. This I called comb *b*.

July 22d, at 10 A.M., I took from a full colony its queen and all its brood, putting in the center of the hive combs *a* and *b*, and filling out the hive with combs containing some honey. A feeder was on top.

The combs were thus put on equal footing, so far as I could determine, nearly the same amount of brood being in each, comb *a* having a little the most. Being side by side, in the middle of the hive, neither one could have any advantage in position.

July 24th, at 10 A.M., I examined comb *a* and comb *b*. (I must confess that I forgot to look at them July 23.) On comb *a* I found one cell started. On comb *b* there were 28, a few of them not yet drawn out, only the cells were enlarged. I may as well say here that no other cells were started later, somewhat to my surprise. Perhaps the bees thought it was enough to start 29. All but one were completed.

In this case the bees had their choice of brood of all ages from eggs just laid to sealed brood, *excepting* larvae between the ages of one and three days. If it were true that they were in such haste for a queen that they would select too old larvae, certainly one would have expected comb *a* to have greatly the preference, instead of their being content with larvae so young as 24 hours. But their general preference was for something younger than the three-day larvae—not only younger, but very much younger. Just one cell was started with a larva as old as three days. One can not be positive as to the age of that one, but one can be very positive as to the other 28. July 24th, when they were inspected, not a larva on the comb could have been more than three days old, so it is not possible that a cell on that comb was at any time started with a larva beyond that age. As they were all started *before* 10 A.M. of that day, it is certain that none of them could have been as much as three days old, and probable that most of them were much younger.

Some one may ask, "Why are you so persistent in trying to show that the universally accepted opinion is wrong? What difference does it make, anyway?" The simple desire to have the truth known ought to be incentive enough. But there is something else that makes it seem to me a matter of very great consequence.

It is probable that not one in fifty of the bee-keepers of the land takes the pains to use the means that are now taught to be necessary to secure the best queens, using cell-cups and that sort of thing. Nor will they. It looks like too formidable an affair. So forty-nine out of the fifty might be supposed to talk something after this fashion:

"I am told I ought to breed from my best stock. I can make queenless the colony having my best queen, and start queen-cells galore, and from these I can have all the queens

I want. But if I do that the bees will select larvae too good for old queens, and I can't use the complicated plans that queen-breeders use, so all I can do is to go on as I have done." And that means to have his increase and his queens from swarming colonies instead of honey-gathering colonies. And so the persistence of the fallacy that queenless bees prefer too old larvae cheats that man out of the chance of easily improving his stock.

He should be told the truth in something like these words:

"A queenless colony will rarely, if ever, prefer larvae too old for good queens. None of the most improved methods of modern times will produce queens a whit better than those the bees will rear in a colony you have made queenless, so long as they have young enough larvae to select from. After the larvae have become too old they may still start cells, and these will produce poor queens. If you give to a nucleus or a colony two or three good-looking cells, there is small chance of a poor queen. Or you may give to the queenless colony a fresh frame of brood and eggs five or six days after being made queenless, and then you need have no fear of poor cells on any of the previous frames."

Marengo, Ill.

[If I understand you, doctor, this last experiment fully confirms the former one you made, and which you related in GLEANINGS. Bees, then, if given their choice, do not take larvae too old. Nature's plans are usually not so far faulty that they result in a retrograde of stock. We may, therefore, assume that, even in this case, Nature does not make a mistake, but takes, when she can have them, young larvae—those which, according to best practice, are the most suitable for the growing of vigorous full-sized queens.

Here is something more on the same subject.—ED.]

THE CHOICE OF LARVAE IN QUEEN-REARING; APPARENT CONTRADICTIONS HARMONIZED.

Mr. Editor:—Dr. Miller's remarks on the choice of larvae, p. 717, cause me to write of the following observation. I gave, as an index, to a colony I believed to be queenless, a frame containing brood in all stages, from the egg to the sealed cell. Looking at it two days later I found that the bees had been distributing royal jelly in the most indiscriminate way. They had started queen-cells in the regular way; but some of the full-grown worker larvae were sloppy with food, and were being sealed up in dome-shaped coverings that made them look like drone brood. There were also all stages between the two extremes. I then gave the frame to a nucleus with a young virgin, when all the cells were destroyed except those of the normal worker brood. If the dome-shaped cells had contained drones (they were certainly on worker comb) they would hardly have been destroyed. Don't

you think they would have produced fertile workers if I had left them with the first bees?

As little more than a beginner (this is my second year) I hardly know how much my observations are to be trusted, but I am confident that the facts are as stated.

GEORGE A. BATES.

Highwood, N. J., Sept. 5.

[In reply to the above, Dr. Miller says:]

Taking the last part of your letter first, I may say that I haven't the slightest idea. The item to which you refer, p. 717, 1900, was written more than a year ago, and was a reminder of a challenge to Messrs. Brice, Taylor, Hutchinson, and others, to produce proof that, when a colony is made queenless, the bees are in such haste for a queen that they choose larvae too old for good results. I said the season was well along, and neither of the gentlemen named had offered any proof, adding: "Here's a simple thing that any one can try: Take away a queen; then watch whether the first queen-cells started contain small or large larvae. Either give a proof that queenless bees are in such haste for a queen that they choose to their hurt; or else abandon the belief as a false tradition of the dead past." Another year has now passed, making an opportunity of two full seasons to furnish the required proof; and as they have not furnished it the conclusion must be that the matter was not worth their while, or else that they could not give the proof. It isn't reasonable to believe that they did not think worth while, from the fact that they had already taken the pains to give the matter as much time in trying to refute my view as it would to furnish the proof if it were possible to furnish such proof: so I think I am justified in saying that they could furnish no such proof.

In your observations you found that, two days after giving brood to queenless bees, they were sealing full-grown larvae. That leaves the matter a little indefinite. If you had observed when they were sealed we should have something more definite. If you are not familiar with such matters it is possible you might think they "were being sealed up" a considerable time before the actual sealing. Suppose, however, a still greater advance, than you name, and that the cells were actually sealed two days after the brood was given. The bees having been already queenless would begin work upon the queen-cells immediately upon the brood being given, and there would be two days of feeding before sealing. As there are five days of feeding, the bees would, under our supposition, have chosen larvae three days old. As the worker larvae are not weaned till three days old, or, in other words, are fed for three days the same as royal larvae, they would not appear to be too old for good queens. So you will see that the case you cite is not a proof that the bees chose larvae too old.

In the absence of any proof to the contra-

ry, I am strongly of the opinion that the larvae were not actually sealed until more than two days after the brood was given. I base my opinion upon observations extending over a period of forty years, and especially upon observations of hundreds of cases during the last two years, with my attention carefully directed to the matter. In no case have I ever found the bees selecting a larva that seemed to be as much as three days old, and I feel pretty sure that Messrs. Brice, Taylor, and Hutchinson would mention it if they had found a larva more than three days old chosen. I may say, in passing, that I do not believe that a larva three days old is quite as good as one younger, in spite of the fact that such larva has not yet been weaned. My only reason for this belief is the fact that I have never known the bees to select by preference a larva as old as three days.

You ask if I don't think that the "dome-shaped cells" would have produced laying workers if they had been allowed to come to maturity. I do not at all believe they would. It was formerly supposed by some that laying workers had in some way secured some royal jelly during their larval period. Later investigations have shown that, where laying workers are found, a large number are present, perhaps half of the workers in the hive containing eggs; and in some cases laying workers appear so soon after queenlessness that their larval period must have been completed before the colony became queenless.

You are entirely right in thinking that what you call dome-shaped cells did not contain drone brood; but you are just as far wrong if you think such cells could not contain good queens. If you find at any time a queen-cell that is rather small and smooth, *in a place where there is plenty of room for it to be made larger*, as on or near the edge of a comb, you are safe to reject it as one not likely to produce a good queen. The case is different if the cell is in the middle of a comb with all the surrounding cells occupied with brood. The bees do not seem to have room to enlarge and ornament such a cell: and all that I have ever seen in such situations had the surfaces as smooth as the cappings of drone-cells, a slight difference in size and shape being the only thing to distinguish such a cell from a drone-cell. But you may generally expect a good queen from such a cell; and I think it probable that, if you had allowed the cells you mention to go on to maturity, instead of laying workers you might have had good queens.

C. C. MILLER.

Marengo, Ill.

"SHOOK" SWARMS.

The Ideal Plain Section.

BY GEO. SHIBER.

The past season I have practiced quite largely the plan of "shook-off" swarms, the same as described by Mr. L. Stachel-

hausen (p. 840, 1900). I have found that, as a rule, this method of swarming of normal colonies toward the time of natural swarming obtains the best results in comb honey, and is a tiptop method in my locality, where the only surplus comes from clover and basswood, if done at the right time. I followed almost precisely the same method as Mr. Stachelhausen, at the beginning of the flow; but I added, during fruit-bloom, another story of eight empty combs below the brood-chamber to prevent swarming until clover bloomed. I think this had a tendency to make colonies build up faster and stronger than if I had not added the empty combs below.

When the time came to put on the supers (each one had a few baits) a new hive with starters in six frames, and some with only five frames, was placed on a stand of the colony to be operated on, and every bee was shaken from the combs into a new hive. A frame of brood I put in the new hive for a few days to hold bees; but this comb of unsealed brood served a double purpose—it kept the pollen out of the sections, for I noticed when this comb was not added the bees carried pollen into the sections. Mr. Stachelhausen used half-story bodies, while mine were full-size eight-frame. I like the plan first rate. It is just what I want; for, with very near neighbors, on each side of the apiary, it's not just the thing to have swarms come off, filling the air in the neighborhood with bees.

One colony so treated gave me 146 filled sections ($3\frac{1}{2} \times 5$) of white-clover honey. My average was 91 sections to the colony.

I have tried the Ideal sections this year for the first time. I am pleased with them. It is my opinion that a super of 30 of them will be filled about as quickly as a 24-section $4\frac{1}{4} \times 4\frac{1}{4}$ super.

Speaking about red-clover queens reminds me that this year both black and yellow bees worked on red clover in July.

I think the effort for breeding longer tongues is all right. But if we will use a little logic that we used to study in school, we shall find that queens have always been raised with the one thing in view; i. e., better workers. The queen-breeders and honey-producers, large and small, have always bred from their best queen, the one whose bees have done the best, and that's just what is being done now. All that we gain is the *knowledge* that the "long tongue" is what does it; so the matter can be summed up by the following syllogism: All good workers (bees) have long tongues. These workers (bees) have long tongues. Therefore they are good workers. So all we have gained is that we know what makes good workers, provided it is entirely long tongues that do the trick.

Since writing the above, GLEANINGS for Oct. 15 has come to hand, and I see that Mr. G. B. Howe (page 822) gives two eight-frame bodies to his colonies to enable them to build up in the spring; and I suppose we are to understand that he leaves them the 16

combs when he puts on the supers. I have used only the one body when the sections were put on. But anyhow, I think the practice of giving colonies two bodies in which to build in the spring is all right, and has a very great tendency to delay swarming until the time of the flow, and makes booming colonies.

Franklinville, N. Y.

[It is not yet proved that long tongues "will do the trick." All we know is that some good workers have extra-long tongues; but we have no absolute proof yet that the amount of honey is in proportion to the length of the tongue. But even if long tongues are an important factor, there will have to be other factors in order to produce a good all-around worker-bee.

I do not know what is the practice of Mr. Howe; but at our out-yard we sometimes leave on the two stories; but as a general rule we take off one story and put in its place supers of empty sections with foundation.—ED.]

HONEY STATISTICS NEEDED.

Seeking Government Aid; how shall it be Done?

BY W. A. H. GILSTRAP.

Some time after the honey crop for this year in Central California made such a poor record, it occurred to the writer that all honey-producers and dealers should know it. Some way the dealers learned there was a large crop in the southern counties. They failed to learn that comparatively few bees were left to gather it. GLEANINGS kept the actual facts before the public eye, or tried to, but who saw it? A few dealers and a sprinkle of the honey-producers. How many dealers believe such reports from an apicultural editor? Not very many, perhaps. To my mind, a "long-felt want" would be supplied by having the Department of Agriculture report the condition of bees and yield of honey at proper times of the year. A statement of the need of such information, with some reasons for the same, was sent to the Statistician of the Department. His reply expressed a desire to take up the work when Congress places sufficient funds in the Department's hands for the work. My reply contained the following:

"While thanking you for your kind letter in regard to reports of honey-bees and their chief product, I am especially pleased that you state why reports are not made; and it seems to me that such objection could and should be overcome. When Congress becomes convinced that the measure is decidedly for the public good, the funds will be placed in your hands with which to conduct the work."

"If you will kindly give me some estimate or data to work on I shall place the same before those most interested, and endeavor to have the matter brought before

Congress on the earliest practical occasion. As to how your office can handle this additional work to best advantage—bees and other lines, or bees and their products alone—of course you can best judge."

UNITED STATES DEPT. OF AGRICULTURE, }
DIVISION OF STATISTICS. }

Washington, D. C., Oct. 17, 1901.

Dear Sir:—In reply to your letter of October 12, I can only repeat the statement made in my previous letter, that the funds at the disposal of the Department for making statistical investigations are inadequate to pursue subjects other than those already dealt with. There are many agricultural products of interest that the Department would be glad to include in its investigations were the funds sufficient; but unless substantial additions are made by Congress to the appropriations for these purposes it will be impossible to enlarge the statistical investigations to any great extent. I should be very glad if you can present the matter in such a way as to induce favorable legislation, as communications are constantly received from persons interested in various agricultural products of importance not dealt with by this office, which show the desirability of including them.

Thanking you for the interest you take in this matter, and trusting that your efforts may be successful, I am
Very truly yours, JOHN HYDE.

It will be noted that my main inquiry was not replied to; but it may be better to let the amount of the needed appropriation remain indefinite for the present. However, we know a few things.

1. While bee-keepers know more about the honey crop than others, they are not properly posted.

2. We have no way of getting such information, or of making such information sufficiently public, at present.

3. The Department of Agriculture *can* give us the desired assistance, and *will do so if we make the proper effort.*

This is a big work, and every journal of our pursuit can help, perhaps, more in stirring the fraternity than in all other ways. To the honey-producers I would say, "Let's be enterprising and public-spirited for once, and that once all the time." If each bee-keeper in the United States would present the matter to his Representative in Congress it would have weight. Honey-producers should report their townships to the Statistician when possible. By so doing we may influence legislation, and will be in position to get reliable information when apriarian reports come in. See that crop reports are posted monthly in all postoffices. That will keep statistical work before the people. When the people call for an increase in statistical service it will come. Bee-keepers' societies, especially our National Association, may exert a strong influence.

We need a report in the spring, say May 1, showing how bees have wintered. The report on both comb and extracted honey should be taken the first of July or August, also Oct. 1. These reports should be as accurate and public as possible. If there is any other plan as good as the above, let us have it. If not, let us all take hold of the above plan, and we can get it to work. This widespread ignorance and uncertainty is too costly to be endured.

Grayson, Cal., Oct. 28.

[Mr. Gilstrap is on the right track. If there ever was a time when bee-keepers needed reliable statistics as to the amount of honey produced, that time is now. Private enterprise can hardly secure them. Even if all those who produce honey would take a bee-journal, there would still be a lack of exact data. Mr. Gilstrap is quite right in saying that we should write to our Representatives and Senators in Congress; but until Congress meets it would be quite useless to waste our powder now. I would, therefore, suggest that he take this matter in hand, and at the proper time make a general request, through the bee-papers, calling on their subscribers to write to their Representatives in such a way that we can at least start the ball rolling, even if we do not secure at once the needed appropriation. In the first place, some one in Washington—perhaps Mr. Danzenbaker or any one else who is equally interested—can ascertain for us what would be the *proper time* to pour in this deluge of letters.—ED.]

SUDDEN STOPPAGE OF EGG-LAYING.

Is it Proven that the Removal of a Queen in the Height of Her Egg-laying, from a Strong Colony, and Sending Her Through the Mails, is Detrimental to Her?

BY ARTHUR C. MILLER.

Mr. Editor:—In your footnotes to my article in GLEANINGS for Oct. 15 you express doubt as to whether sufficient data exist on which to base so positive an assertion as I made regarding the effect of the sudden confinement of laying queens. Some years ago Mr. Alley and Mr. Doolittle made extended experiments to determine this very point, and they arrived at the conclusion that the injury so often noticed in queens received by mail was caused by the *sudden cessation of egg-laying*. I expect to prove to you that it is *starvation* which does the damage. They found, and you have found, that not all queens caged when at the height of their laying showed signs of harm. If you will consult the back volumes of our papers you will find many records of *fine queens from full colonies* "going bad" after shipment. *Contra*, you will find very few records of *untested* queens acting the same way. I believe this is because nearly all "*untested*" queens have not reached the height of their egg-production, and are generally shipped from a "*nucleus*," which, when newly formed, contains mostly young bees—"feeding" bees; so the queen is pretty sure of a retinue which can supply her with *proper* nourishment. A constant supply of nitrogenous food is more essential to the well-being of a laying queen than to any other bee in the hive, as you can well realize. Mr. Simmins is very emphatic on the folly of keeping young queens confined in frame nurseries for a number of days after hatching, claiming at that age, while they feed themselves, they need nitrogenous

food, and that it is vitally important to their development. But, on the other hand, so careful a breeder as Mr. Alley keeps virgin queens in cages for a *short* time, and presumably with no ill effects, or he would discontinue the practice. The nuclei from which his queens are fertilized, and in which they usually remain until shipped, contain five frames, five inches square. You can see that there is little chance for full rate of egg-production. Mr. Alley, I believe, very seldom has reports of his queens "going bad" after shipment.

Isn't the foregoing evidence of sufficient weight to warrant a pretty positive assertion? But I will amplify and elucidate: If a queen taken from a full colony in the height of her activity has caged with her, say twelve attendants which happen to have their stomachs charged with a full supply of pollen and honey, there is a fair chance of her receiving sufficient nutriment to take the place of the waste of tissue caused by egg-development. But if such queen has as attendants twelve bees, only a few of which are so supplied, how and from whence is she to get the needed food? And that she does need such food I believe is indisputable.

I think you gave in the A B C the advice to pick for escort bees those with their heads in a cell, getting honey. Such bees are usually the field bees, and are very seldom the "nurse" bees with a full supply of chyle. Cage such a queen alone and put the cage in a full colony, and she is little, if any, better off than in the shipping-cage with the attendants; worse off, unless she is near unsealed brood. To appreciate this, please note that, except in the exercise of the latent "mother instinct" in feeding larvae, a worker-bee never *voluntarily* gives food to any other bee, either queen, drone, or worker. Food always has to be *asked* for—sometimes apparently taken by force. Under such conditions, what hope has the caged queen of getting needed nourishment? She has to depend on the chance of a properly supplied worker coming within asking distance, and then risk getting her to give up some of her supply. If her cage is near unsealed brood the nurse-bees are numerous; but if she is in an upper story, do you wonder that she suffers for want of nitrogenous food?

A bee wanting food (other than honey or when honey is not accessible) "holds up" all comers until one is found with a supply. As soon as the latter can be persuaded to give, she opens her mouth and the hungry bee puts its tongue well into it. The giving bee at the same time generally curves and contracts its abdomen, much as if to sting, which is probably necessary to enable it to disgorge the food when the stomach is not *full*. The curving of the abdomen is not always done. The tongue of the giving bee during the operation is curved back under her "chin" nearly as close as it is normally carried when not in use. The abdomen of the *taking* bee palpitates

just as when taking nectar from the flowers or honey from a cell. I have often seen a drone seize the worker by the "cheeks," tip up the worker's face to a convenient angle, and hang on until either it had no more to give or he had gotten his fill. The sudden show of tongues when a queen or other bee is getting food thus is purely a case of trying to get dainties, and is *not* an offering of food to their royal mother or distressed sister.

Remember that a queen in the full exercise of her functions is developing two and a half times her own weight of eggs every 24 hours. It is not the sudden taking of the queen from a place in which to deposit her eggs that injures (for she can and will continue to extrude them as they develop), but it is the lack of sufficient proper food to restore the drain on her system. If such food is not available in sufficient quantity, she starves, and on the duration of such starvation depends the extent of injury to her vitality. Knowing these things, and knowing that a queen free in her hive can ask and obtain food from thousands of bees, is it irrational to believe and assert that she must suffer when compelled to depend on twelve bees, only a few of which may be able to supply her needs? These statements may be readily verified by any one who cares to take the necessary pains.

Mr. Editor, have I made my case good?
Providence, R. I., Oct. 22.

[You have presented some facts that seem to point in one direction; but so far, if I am any judge of evidence, not enough has yet been offered to warrant a positive assertion one way or the other. True science would demand more and better proof than an opinion based on certain phenomena that might take place from a combination or a variety of causes. Too many times have we sent queens in the height of their egg-laying, from strong colonies, without any bad results, and the escorts were those having their heads in honey, for I have put them up myself. You may be aware that the Root Co. has probably had as extensive an experience in queen-rearing as anybody in the United States. Queens "go bad" for all the breeders, and even for Mr. Alley. While he does produce some very fine queens, some of them, as I have known, have gone very bad.

Now, having said this much, I do not wish to appear set in my way. I am open to conviction; and to show you that I am anxious for the truth I present a letter that seems to support your views. Mr. H. G. Quirin, one of the largest queen-breeders in the United States, writes:

Mr. Root:—When first engaging in the queen-traffic we used and adopted the two-frame full-sized frame, L. size; but it soon occurred to us that it took too many bees to stock 600 or 800 of these boxes, so we gradually changed to a smaller frame, just a trifle less than half the L. size. By having a division in our old nucleus-boxes we can have two nuclei where we formerly had but one. Of course, these small nuclei can not stand the extremes that a larger one will; but by giving them the proper attention, just as many queens can

be taken from them as from a large box (did not Mr. Sladen tell you about our small nuclei?); besides, queens kept in these small boxes are never so heavy with eggs as in the larger boxes.

As to queens being injured when heavy with eggs when stripping, this is quite reasonable. Our experience would indicate that queens taken from full colonies, when heavy with eggs, do not turn out quite as well. We have had some very discouraging reports from some such queens sent out; but it rarely happens that we have a bad report from queens taken from these small boxes. As a rule our higher-priced queens are kept in full colonies or in three or four frame nuclei. It unfortunately happens that these queens appear to get the worst of it; in fact, we have come to the conclusion that hereafter we shall be obliged to keep our very best queens in nuclei instead of in full colonies.

It often happens that a queen receives a dent in the abdomen when sent in the mails. Many might give a queen a passing glance and call her O. K., but this dent will prevent her from being a good layer unless it is removed. The removing of the same is very simple. Take the queen between two fingers, and press gently. If done properly the dent will snap out. To illustrate, take a sheet of writing-paper, roll it up the size of your thumb, then dent it; then try to remove the same by pressing on each side of the dent. Practice with the paper, then try the queen. It may take a little practice to do it. We have gotten so we can take a dent out in two or three seconds.

Of late years we have come to the conclusion that many queens are injured while being introduced, both as virgins and as laying queens, the bees themselves doing the mischief. But in our own apiary we have practically overcome even this difficulty. The remedy is to have brood of the proper stage in the nuclei; and when no honey is coming in, feed them. Permanent feeders are attached to all our nuclei. An ounce or two of feed to such a small nucleus is equivalent to five or six pounds to a full colony; and should there be no nectar in the flowers we can very easily make an artificial honey-flow, which we consider quite an essential to get the young virgins developed into good laying queens as it is to feed the cell-building colonies to get good cells.

H. G. QUIRIN

Parkertown, Ohio, Oct. 31.

[We should be glad of further evidence from queen-breeders. Those who make a business of sending queens by mail in large numbers are more competent to give an opinion in this matter than the general bee-keeping public who buy them. In saying this, I do not in the least question the ability of Mr. Miller. It is important that we get at the truth of this, let that truth cut where it may. If a sudden stoppage of egg-laying, or if the queen, as Mr. Miller believes, is starved for want of proper food, then knowing the fact we can provide the remedy. As to how much the queen needs of one element of food over another I should like to hear from Prof. Cook. And right here, let me ask, has it been demonstrated that a queen needs more nitrogenous food in the time of her egg-laying than at other times? All of this is deep water, and I hesitate to wade out where I can not swim.—Ed.]

THE SWARMING IMPULSE AND A GOOD HONEY-FLOW.

The Relation of the One to the Other; an Interesting Theory that Possibly Explains Certain Phenomena in the Bee-hive Economy.

BY L. STACHELHAUSEN.

Since E. R. Root mentioned, page 520, that in Southern Texas "the bees commence swarming early in the spring, and, when the

main honey-flow commences, actually stop swarming," this matter was discussed somewhat in the bee-papers. I observed this fact when I commenced bee-keeping here in Texas, 21 years ago. If we consider all the circumstances we shall find it not so very astonishing.

In our climate the bees commence breeding when the first pollen-spending plants are in bloom. This is at the end of January or the first half of February. From this time we have a moderate honey-flow, more or less according to the weather. If the conditions are favorable our bees build up very fast. I had swarms as early as the middle of March. Generally they are strong enough to swarm the first half of April. The main honey-flow in my locality generally commences in May, about a month later than the regular swarming time.

If we use small brood-chambers, the colonies will have cast prime and after-swarms, and these will build up to good colonies before the main honey-flow commences. This is so in favorable years, and then we get more honey from these divided colonies than from an undivided one. In this case it is quite natural that we should not expect more swarms during this comparatively late honey-flow.

If we use large brood-chambers, by which we can, to a certain degree, prevent swarming, we may think, as some say, the bees would swarm later, and would give larger swarms. In some very favorable springs, when these large hives get full of brood before the main honey-flow commences, they will, in fact, swarm more or less. So it was in 1900. In most years the colonies will not reach this maximum of brood before the main honey-flow commences; and during this honey-flow even these strong colonies will not swarm any more.

Why this is so is a problem very little understood as yet. We knew, long ago, that a good honey-flow will stop swarming, sometimes even when queen-cells are already started. I do not know who the first one to observe this, but I do know that Gravenhorst told us so about 25 years ago, without explaining why.

The question, then, is, "By what circumstances are the impulses of the bees incited and governed?" At present we have a theory based on the knowledge of the nourishment of the bees. In my opinion this knowledge of the nourishment is as important as the Dzierzon theory for practical bee-keeping, of which A. I. Root says: "It is the cornerstone and solid rock upon which nearly all we know about bees is based." But I am sorry to say this theory of nourishment is so much neglected as yet by the bee-keepers of this country that one of our prominent writers confounds "chyme" and "chyle."

It would take too much space to explain all this thoroughly. As briefly as possible I will say that the fully digested food called chyle, which is prepared in the true

stomach of the bee, is fully identical with the blood of the bee; the only difference is that the latter has gone, by osmosis, through the walls of the stomach. The young bees prepare this chyle, and feed it to the young larvæ, to drones and queen, and sometimes even to old workers. As long as the number of young bees is small compared with the number of larvæ, the bees will have enough customers for the chyle; but at a certain state the queen will not lay enough eggs compared with the number of young bees; the chyle will remain longer in the stomach; more of it goes through the walls of the stomach, and this causes a certain extension of the blood. This causes at first the wax-glands of the bee to secrete wax. The material for the wax is, of course, taken from the blood; but no albumen is necessary for it, consequently the blood will get richer in albumen, and hereby the drone impulse is induced. At first, drone-cells are built. As the same chyle is fed to the queen she is governed by the same impulses, and will lay eggs in the drone-cells. But still more and more young bees are gnawing out, while the queen either has no room to lay more eggs or is not able to do so. More chyle is accumulated, and the blood is still getting richer in albumen, till the swarming-impulse is incited, queen-cells are built, and the queen will lay eggs in them, and a swarm is a necessity. That is, theory teaches that the impulses of the bees are, *gradatim*, advanced from breeding-impulses to wax-secretion, drone-impulse, and swarming, by the different extension and chemical composition of the blood of the bees.

If, at the right time, a very good honey-flow commences, the swarming-impulse will not be incited, for different reasons. The first one is, the bees gather less pollen, which is the albuminous food of the bees. The main reason, I think, is that a large part of the young bees will be engaged in changing the nectar to honey, as Doolittle explained years ago, consequently they can't prepare chyle. The old bees are busily engaged in field work, and this needs a good nourishment of the muscles with blood rich in albumen. These old bees do not prepare chyle, but the same is fed to them by the young bees. We see now we have plenty of customers for the prepared chyle, even if the brood is diminishing. The blood of the bees will get poorer in albumen, consequently the swarming-impulse is diminishing.

It is easy to see, the faster the honey-flow the more it will suppress the swarming-impulse, and may even diminish the desire for brood. Many other astonishing actions of the bees may be explained by this theory, for which we have had no explanations.

Converse, Tex.

[Mr. Stachelhausen draws a distinction between chyme and chyle, and very properly so. *Chyme* is pollen *partially* digested. Chyle is the *fully* digested product, and is what is commonly known as "royal jelly."

Chyme is fed to nearly full-grown larvæ just before capping, while chyle is probably fed to the very young larva up to three days old. But this young larva in a queen-cell is fed continuously with this rich food till the cell is capped over. The theory advanced by Mr. Stachelhausen, in a nutshell, as I understand it, is this: The swarming impulse is incited by too much albumen in the blood — that is, too much digested pollen food; and as soon as a heavy honey-flow commences, this rich food is diminished (for lack of pollen), and the surplus previously stored in their chyle-stomachs is given off to the field-bees to supply the rapid waste incident to the flights to and fro with the heavy loads of nectar from the fields. The nurse-bees then do not have enough of this rich food to bring about the conditions favorable to drone-brood rearing and queen-cell building; consequently swarming will cease.

But there is one thing that this theory does not fully explain. It will be remembered that in Texas and Arizona the cessation of swarming is often followed by the destruction of cells and of drones. The cells that have been capped over, and the drones that have been raised to maturity, do not require the rich food, which is getting short. Why, then, should this capital (cells and drones) be destroyed *unless* the bees feel that swarming at a time of year when honey is coming at its height will be not only wasteful but a great loss in the amount of honey secured? —Ed.]



PURITY VS. GOOD WORKERS.

"Hello, Doolittle! I came over this morning to have a little talk with you about the purity of bees. Are your bees absolutely pure?"

"What do you mean, Mr. Brown, by absolutely pure?"

"Well, I supposed you would know, and so I asked you. I see in some old bee-papers I ran across that pure stock was the best, and so I asked the question I did to see if you had the best."

"Much has been said during the years that are past about a standard of purity for our bees; and I have often been led to ask myself the question, 'Can we, as apiculturists of America, adopt a standard of purity that will always secure to us the best working qualities in our bees?'"

"And how did you answer this question?"

"As doubtful."

"But queen-breeders have a standard of purity, do they not?"

"Possibly some do; a standard which they adopt as breeder of Italian, Carniolan,

Syrian, Cyprian, etc.; but for the masses of honey-producers to adopt the same standard would be quite another thing."

"Why so?"

"Because the workers from different queens of the same color and general appearance show a vast difference as to working qualities; at least, such is my experience."

"Oh! Then you think the honey-producer should breed from his queen that gives workers proving the most valuable in bringing in nectar from the fields, rather than for those of the most uniform markings or purity?"

"That has been my idea all through the past 30 years, since I tried for better working stock."

"Thirty years! That is a good while. And do you think you have better bees to-day than when you first commenced—better bees regarding their honey-gathering qualities?"

"Well, I do not know that I secure a larger yield from single colonies now than I did then; but the average yield of the whole apiary is very much better as compared with the best colony than it was then."

"Please explain."

"When I first began work along this line of improvement of stock I would have some single colony in the yard that would produce a large yield of honey, while at the same time it would take a dozen of the poorer ones to give as much surplus as did this one, quite a few often giving scarcely a single pound of surplus."

"That is just the way I find it with my bees. Do you think that such a state of affairs can be remedied?"

"Perhaps a bit of experience will best help you to understand what I mean. In 1877 I had one colony in the yard, which had not swarmed when all the other colonies, or nearly all, had got through swarming. Thinking it a little strange that such was the case I went to it and found that it had 60 pounds of comb honey nearly ready to come off. About a week later this colony gave a fine swarm, which was hived; and, although the parent colony had none of its queen-cells cut, it never offered to swarm again; and the result, at the end of the season, was, according to an old diary bearing that date, 195 pounds of box honey from the parent, and 114 lbs. from the swarm, or 309 lbs. from the old colony in the spring, all told. And that same year I had other colonies that did very little."

"Whew! Of course you raised queens from the mother of those bees which did so well?"

"Yes, I reared nearly all of my queens from this one as long as she lived, and found many of them giving good workers which were long-lived, and great honey-gatherers, I always raising from the best and superseding the poorest. After the old queen died I began to secure queens from other parties who reported good yields of

honey through the bee-papers; but as many of these did not prove equal to those I had, these were superseded as soon as I found out that such was the case."

"Did you use any of those obtained from others as breeders?"

"Yes. Some of them proved very good indeed, and these were used, in connection with those I have told you about, although I have kept the first very largely in the majority ever since, till to-day the yield from all colonies is more nearly equal each year, unless it is from colonies from queens which I have procured from other apiaries. Working in this way I have bred up a strain of bees which please me; and from the many queens I receive from other parties, by way of exchange and by purchase, I am led to believe that any one taking this course can breed up a race of bees second to none as to honey-gathering qualities. But I am free to confess that, for purity and yellow bands, there are bees in the United States which far excel those bred in this way."

"And I suppose you think that your bees thus bred are very near or quite perfect?"

"No. All I claim is that a great improvement has been made, for I am still striving to advance my bees further along the honey-gathering line, so each year finds me procuring queens from the most approved sources, although it is seldom I find one I care to use in connection with my own for breeding purposes; but as this 'seldom one' is of great value, I consider myself well paid for all trouble."

"But have you not got tired of sticking to this one thing for so long a time?"

"No, not by any means. There is nothing in all the realm of bee-keeping that gives me more pleasure than does this improvement of stock for its honey-gathering qualities; and as we have several of our most prominent apiarists at work along this same line, I believe the day is not far distant, if it has not already come, when the bees of America will be considered and conceded to be the best in the world."

"This, probably, is only your own thought. I suppose each nation might think the same of its bees."

"I may have been a little egotistical regarding our American bees; but the sending here for queens from nearly every bee-keeping nation in the world would show that I could not be far wrong in my conclusions. If I am correct, The A. I. Root Co. has had orders for queens from many of the nations of the Old World, and from the islands of the sea. And I have sent queens to fully fourteen different countries besides our own. It may not seem so to you, but I do not consider it an unpardonable sin to have a feeling of pride over the achievements brought about in our American bees through the untiring energy and well-directed efforts of our apiarists to bring about the results in the honey-gathering qualities of our bees which we now enjoy."

NOTES OF TRAVEL.

Another Bee-keepers' Paradise, in Arizona; some Peculiar Conditions as we Find them in the Tropical West.

BY E. R. ROOT.

In my remarks concerning the bee-keepers' paradise of Central Texas I spoke of the desert-like appearance of the country for miles and miles; of the vast tracts of sand; low shrubbery, and how utterly impossible it seemed that such a country could produce so many carloads of mellifluous sweetness from such land and such plant-life. On leaving Uvalde Co., Texas, and riding all one day and one night and the next day, I saw thousands and thousands of acres of just such land as I had seen in that paradise—land totally undeveloped, without animal life, except, perhaps, the jack-rabbit and the cayote, and without inhabitants except here and there small settlements along the railroad. So far as I could see, all of this country, or at least a great portion of it, would support bee-life, for there were mesquite and catclaw by the square mile. As civilization pushes on, we shall find bee-keeping, probably, following in its wake.

On and on I rode into Arizona, and still there was a desert-like country, until I came to Maricopa County, and then I began to see irrigation and the evidences of tropical vegetation. On the one side of the railroad, I might see ranch after ranch of alfalfa, and on the other a perfect desert of thorns, sage brush, and mesquite. On arriving at Tempe, where there was an uncle of mine living, the delightful aroma of new-mown hay, of the well-known alfalfa, greeted me for the first time, in all its perfection. Along the irrigating-ditches, and wherever irrigation went, in fact, there was the most beautiful and luxuriant growth of all kinds of vegetation.

At the train I was met by my uncle, Mr. J. H. Root, my father's youngest brother, and a typical Root he is. Indeed, it seemed as if I were shaking hands and looking into the face of my father as he looked ten years ago, for Uncle Jess is a younger man. It was not long before one of the principal bee-keepers of the place, Mr. Wm. Rohrig, drove up to the residence of my uncle. I explained that my time was limited, and that I desired to make the most of it, and both of the gentlemen kindly offered to help me make it go as far as possible. We got into Mr. Rohrig's carriage with scarcely a moment's delay, and drove out to the first apiary—that of Mr. J. Webster Johnson, a short distance from Tempe. All the way along I was struck with the beautiful tropical vegetation. All was new and interesting, and I kept my uncle and Mr. Rohrig busy answering questions about as fast as I could ply them. Arriving at the Johnson residence we found our friend away; but he soon returned. He is now Secretary and Manager of the Arizona Honey Ex-

change, a flourishing organization that handles a large part of the honey of this Arizona paradise. Of this organization I will have more to say later on. I requested him to sit out in his front yard close to one of the century-plants that grow so luxuriantly (a very common "weed" for that country), where I might take his picture, and thus give the readers of GLEANINGS something of an idea of what I saw. Here is the result.

Mr. Johnson sits in a chair, *painfully* close to that species of cactus with its sharp spines sticking out in every direction. I have not forgotten the exquisite pain I felt when I stepped back of him in order to size up the position of the camera, for just then I backed up against three or four of those needle-like spines which you can see in the picture. Posing Mr. Johnson, I went back, touched the shutter, and the effect is here reproduced.

But one picture was not enough, so I requested our friend to step in front of another big plant—one of those magnificent spreading palms. This he did, in the full glory of the sunshine; and while he stood there, again the shutter clicked—there, you can just see him fairly wreathed in the splendor of the plant, for it is a most beautiful thing.

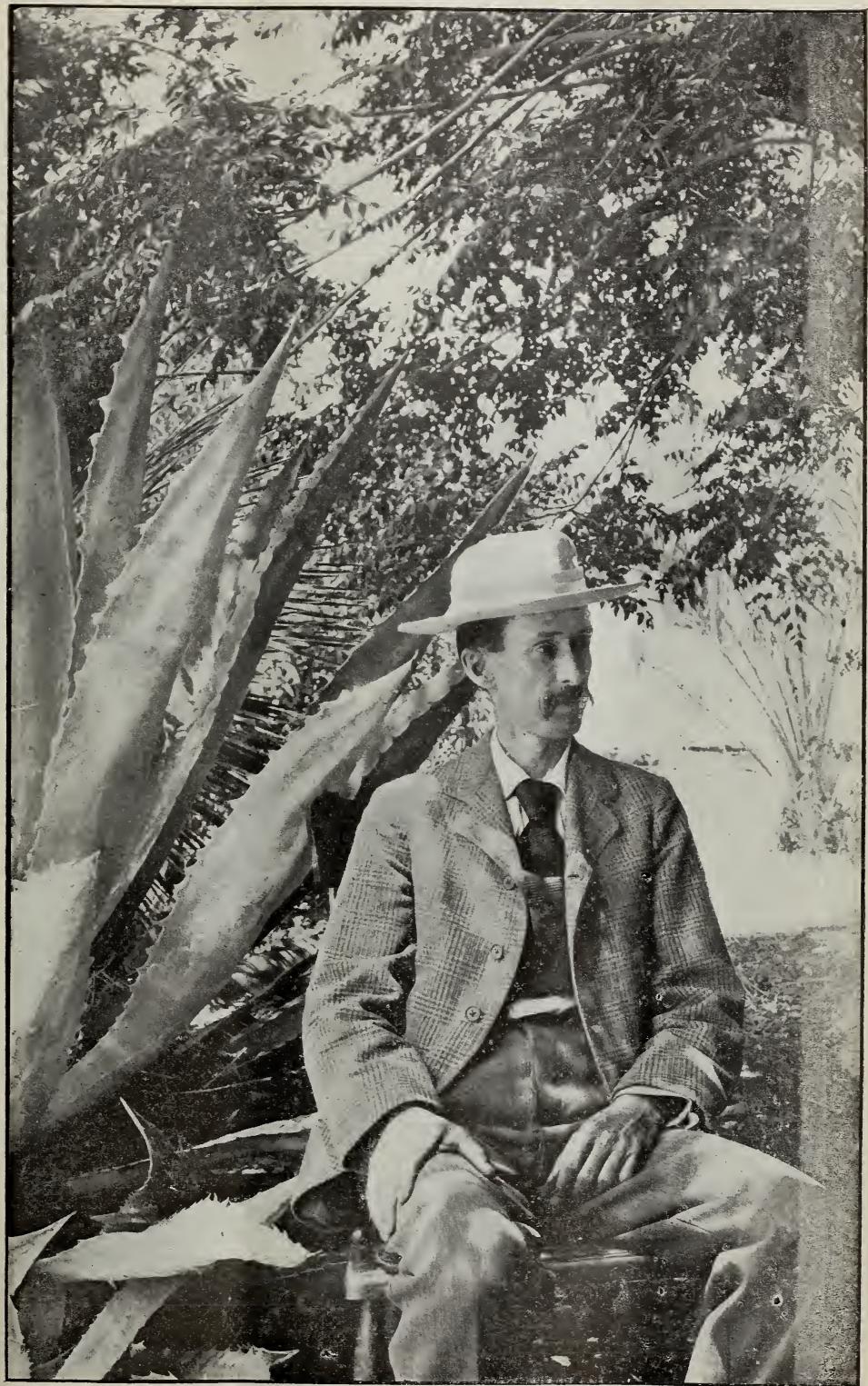
I have seen these palms 50 or 60 feet high; but when so tall they lose much of their enchanting beauty. The older the tree, the higher the branches. The palm before us is not so very old—just how old, I will not venture to say, as my guess would be wide of the mark.

I produce both of these pictures, not because they are directly related to bee-keeping, for they are not, but because they illustrate better than any thing else that I can show the wonderful fertility of some of the lands in Arizona, which can be and are being reclaimed by irrigation—lands which are destined to be the garden spots of the United States, equalled only by some portions of California. No wonder, then, that in this portion of Arizona alfalfa grows the most luxuriantly of any place in the United States. I have seen this celebrated honey-plant in California, in Utah, and in Colorado—States where it is grown so extensively, and where it is such a valuable hay crop; but in none of the States does it grow as rank as it does in Arizona. But the trouble now is the want of water for irrigation purposes. There is no lack of water, if I understand aright, because there are millions of barrels of it going to waste from the melting snows down the mountain-sides; but at present there are no appropriations from State or nation to provide for the building of great ditches whereby this water can be carried into lands that will yield as abundantly as do those now under irrigation.

Thousands of people have been flocking to Phoenix and Tempe from the East and North, away from the long bleak cold winters—away from the damp bone-chilling at-



ANOTHER SPECIMEN OF PLANT LIFE IN ARIZONA; THE PALM IN THE FOREGROUND.



J. WEBSTER JOHNSON, OF PHOENIX, ARIZONA; A SPECIMEN OF LUXURIANT PLANT LIFE.

mospheres to the warm balmy air of Arizona—"God's country," as people call it who have moved there. Indeed, they say there is "no other place in all the earth" that is quite as delightful, luxuriant, so beautiful, and so perfect in every respect, as these reclaimed desert lands, and, if we except portions of California, I don't know but that I agree with them.

It was quite warm the day I arrived, and during some of the subsequent days the mercury ran up to 110, I think, and I had heard of its going up to 120; but the people who told me that that was "God's country" denied that it ever went up as high as that; indeed, they doubted if I ever saw the mercury up to 110; but I insisted that I did see it, for I remembered distinctly how

the hot sun poured down on my back, and that I wanted to get out of "God's country," and go where he had made it cooler. Why, I became so tanned that I looked every whit as black as—as—a typical Mexican greaser. But however warm it may be in summer for a time they do not seem to mind the heat; notwithstanding, it was comfortable for the old residents to go around in shirtsleeves. And, by the by, I must introduce to you Mr. Wm. Rohrig, of Tempe, who sits on a hive with his coat off, rough and ready. He objected to being shown up in GLEANINGS in that style, but I told him not to mind, as I would apologize for him.

In our next issue I shall, perhaps, give you some views of typical Arizona apiaries, how they are placed under sheds or trellis-



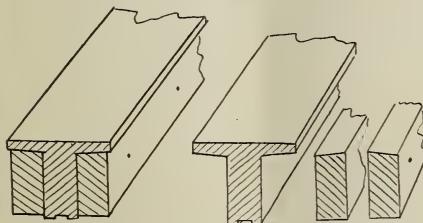
WILLIAM ROHRIG, IN ONE OF HIS APIARIES AT TEMPE, ARIZONA.

es, something as shown in the picture here-with. In the mean time, if there are questions that our subscribers desire to ask regarding these bee paradises, I should be pleased to answer them as I go on. Let me tell you right now that the bee paradises about Tempe and Phoenix are already over-stocked with bees. The only way a bee-keeper can get into them at all honorably is to buy of some one else who is already located—or—or go out on the desert, buy a water privilege, and go at it in true Arizona style. But, more anon.



A NEW SCHEME FOR A TOP-BAR.

I send by this mail a sample of top-bar. Draw the four small brads, and you will then have it. These pieces can be used for bottom-bars—a very economical top-bar. It has the advantage of the thick top-bar for strength, with none of the sawlog disadvantages.



FISHER'S PLAN FOR A TOP-BAR.

The last four years have been failures with me with the bees. I have had no chance yet to test this top-bar. This is why I should like to have you bring it before the public so they can have a chance to test it as to its merits; then should the bee-keepers in general pronounce it a meritorious invention, all I shall ask is justice.

A. J. FISHER.

East Liverpool, O., Oct. 8.

[I do not think that you would find this kind of top-bar would prevent burr and brace combs. While it might not sag, yet so far as those nuisances are concerned I am of the opinion that you will find many more of them on it than you would of the old-fashioned $\frac{3}{8}$ bar. The two pieces taken out of the side would be no direct saving in expense, for every supply-manufacturer has usually enough refuse to make all the bottom-bars he can possibly use; so that what would be saved out of the top-bar would be of no particular value. After an experience of one or two years you will probably find that your bar will be much better with the wood all left in.—ED.]

RESPONSIBILITY FOR LOW PRICES; PUTTING THE SHOE ON THE OTHER FOOT.

Your article in the Oct. 1st issue, page 792, has the right ring to it; but let us see if it is all the "animus" of the "bears," or if some of it is not the stupidity of the bee-men themselves. There is a small town in this county, Escondido by name, which boasts of a bee-association. Just on the eve of extracting-time, this association called a meeting to ascertain (so I am told) how many honey-cases would be needed among the members, and in a day or two after I heard they had decided that there would be 10,000. Think of it—1,200,000 pounds of honey, 40 carloads of 30,000 pounds each, and the area covered by the bee-keepers of the association is a mere speck compared with the rest of San Diego Co.; and there are other locations in the county that are much better. With such a yield through the entire State of California, I am thinking you folks in the East, who are in the bee and honey business, would have to hunt another job or "go west."

Now, the next issue of the San Francisco *Chronicle*, after the meeting referred to, had a clipping from a paper printed at Escondido, stating that there would be 10,000 honey-cases needed in that vicinity. I think it was the next issue after the one referred to above, or the next but one at furthest, that quoted honey half a cent lower, and it's been going lower ever since, until within the last two or three weeks, and now buyers who would hardly answer a letter from a producer are writing, asking the producer *his* price. I think we should not blame the "bears" too much when such statements come from bee-keepers and bee-associations themselves. There is no excuse for such statements being printed and sent abroad to be reprinted. Why do not the members of the association see to it that such reports are given the lie? If they are to benefit the bee-keepers, that is one way, and one of the very best ways, they could do it. This is only one of many instances I could cite; but this one is sufficient to show that the honey-buyers have something to base their reports on.

I was in San Diego a short time ago, and met a bee-keeper from Escondido, and he told me there was not nearly so good a crop in that section as there was last year, and the average would not be more than half a crop.

E. M. G.

Jamul, Cal., Oct. 10.

[What you say is very true; and while it may and probably does apply to some subscribers of bee-papers, yet the very persons who ought to see it are the ones who do not take any bee-paper, but they *think* they know it all. It was a strange thing to me that so many large bee-keepers in the West do not take any journal at all. If they but knew it they could save the price of a paper a thousand times over, even by the market reports alone, to say nothing of keeping

in touch with the rest of their brethren in the craft.

The reference to those 10,000 cans is one of many to show that Mr. Clayton's estimate of the California honey crop, based as it was on the number of cans sold, was far too large.—ED.]

THE EUROPEAN LINDEN.

In regard to the article about European linden, in GLEANINGS for Sept. 15, I would advise you to be careful to find out if all European lindens bloom later than the American kind. In Germany they have two kinds—one with small leaves, *Tilia parvifolia*, and a large-leaved kind, *Tilia grandifolia*. I think this is the botanical name. The first has leaves that measure about $3\frac{1}{2}$ inches across, and the other leaf measures about 5 inches. Some that I have seen were almost 7 inches. The trees don't differ in any other way. I don't know whether both kinds blossom at the same time. The small-leaved kinds seem to be more common.

In front of our house in Germany were two lindens of the large-leaved kind, and I never saw blossoms on them. They were planted in 1872, came from a nursery, and were about 12 feet high. In 1889, when I left home, they were almost as high as the house, but had never bloomed.

CARL VOLLMER.

Columbus, Montana.

[The size of basswood leaves depends largely on the season and locality, but more particularly on the size of the tree. A sapling will have much larger leaves than a tree ten inches through at the base, and yet both may be of the same variety. Whether the *Tilia grandifolia* is the same as our *Tilia Americana*, I am not botanist enough to say; but I am of the impression they are one and the same.—ED.]

BEE AND HONEY BUSINESS AT SPOKANE, WASHINGTON.

Will the editor, or some one else, please tell me through GLEANINGS what the possibilities are for the bee and honey business at Spokane, Washington? I would write to some real-estate man there, but think I am more sure of getting the facts through GLEANINGS.

I have spent the summer here in Colorado, and, being afflicted with dyspepsia, I have found that, between the very hot sunshine and alkali water, I shall be forced to "move on." I don't suppose Washington is perfect; but I am told they have an abundance of soft water, the best of fruit, and more moderate weather. I must say this is a fine country for those who have good health; but you can't build up a good digestion on alkali water.

Sterling, Col.

J. O. HAYNES.

[Will some correspondent please answer? —ED.]



A. I. R. is once more at home, and at his desk; and although he has not as yet looked over the great heap of letters awaiting him he will do so at once.

ON a second reading of my footnote in this issue to A. C. Miller, where I refer to some of Mr. Alley's queens as going "very bad," I see the impression might be gathered that his queens were worse than others'. This I did not mean. I only meant to show that the simple fact of his using small nuclei does not prevent good queens from going to the bad after their journey. I believe his queens average well with others'.

NOT A HONEY TRUST BUT A NEW HONEY EXCHANGE IN CALIFORNIA.

OWING to the fact that there have been great exaggerations as to the California honey crop, and to the further fact that prices have been slashed and cut to pieces on the coast, simply from a lack of co-operation, a movement was started by B. S. K. Bennett, of the *Pacific Bee Journal*, to organize a honey trust, to take in, all the large honey-producers as well as the small ones. The object was to control prices by taking the entire output of honey; but the effort, I understand, fell flat, as bee-keepers do not take kindly to trusts, although they do believe in co-operation. A meeting was held in Los Angeles, and, instead of a trust being formed, a sort of exchange was organized that will be known as the Southern California Honey Association. To this all bee-keepers having 50 or more colonies will be eligible to membership. The Board, as announced in the newspapers, takes in some of the most influential bee-keepers of California. This Board consists of W. T. Richardson, of Ventura; Frank McNay, of Los Angeles; W. W. Bliss, of Grange; M. H. Mendleson, of Ventura; G. W. Brodbeck, of Santa Ana; D. A. Wheeler, of Riverside; G. S. Stubblefield, of Los Angeles; H. C. Williamson, of Redlands. Full particulars will probably be furnished our readers. For the present we are able to give them only the reports as we gather them from newspaper accounts.

THE DEATH OF MRS. MOSES QUINBY.

We have just received notice of the death of Mrs. Martha Quinby, wife of the lamented Moses Quinby, which took place Oct. 31, at the residence of her son-in-law, Mr. L. C. Root, Stamford, Ct., in the 88th year of her age. Her husband died in 1875, so that she survived her husband over a quarter of a century.

In the rapid advancement and many changes in bee culture that have taken

place during late years, and the advent on the stage of many new leaders, we of the younger generation are liable to forget the names of two of the great bee-lights, fathers Quinby and Langstroth, who, more than any one else during the infancy of bee-keeping in the United States, first placed the industry on a paying and substantial basis. Quinby was one of the most successful bee-keepers who ever lived; indeed, if I am right, Mr. Quinby was the first to produce and ship a whole boatload down the Hudson to New York city. Such an amount of honey at that time (the early 50's) literally broke "the market," for no one knew what to do with so much honey. This remarkable feat was performed with *box* hives. Yes, father Quinby made his bees pay; and, as I understand from Capt. Hetherington and others who knew him, he was one of the most lovab'e and unselfish persons the world has known. Never a beginner went to him for instructions without receiving generous advice, even though that advice might bring into his territory new and disagreeable competitors.

As is often true in the case of a great man, we know little or nothing of the wives who shared their toils equally in their successes and failures. This is true of Mrs. Quinby; but I think we may safely say that some degree of her husband's success was due to his kind and loving helpmeet who has for so many years survived him.

HONEY-PRODUCERS THAT OUGHT TO BE SCORED.

We are just getting in considerable quantities of comb honey. It is evident that some of it, having been held back, is now being unloaded on the market. This is unfortunate, but I do not know that it can be helped.

But there is one thing I feel like *scolding* about, if I may use this disagreeable word, and that is the carelessness of some comb-honey producers. Much of otherwise good comb honey that we have received is not properly graded, with the result that we are compelled to go over it section by section. We now have on hand about a car-load that will all have to be re-sorted before we could offer any of it as fancy and No. 1. This we must charge up to the producers, for we can not afford to do this grading for nothing, nor risk our reputation in putting out such a mixed lot. Much of it was graded, or an attempt made at it; but, such grading! And, to make matters still worse, some lots were unseparated, and a little was either broken or leaking.

I do not blame the commission men for being disgusted occasionally, and for charging good round commissions, if this is the way honey sometimes goes to market. The use of separators first, last, and all the time, will, in the great majority of instances, earn from one to two cents a pound; and why will bee-keepers be so foolish as not to separator (or, better, fence) their supers?

Still again, we are continually getting lots not scraped. One little lot was wormy; and—would you believe it?—the producer even went so far as to dust flour on the surface of the sections to cover up the tracks of the nasty things.

It does not cost any more to produce first-class honey, or but very little more, than it does second-rate goods; and after having produced some good honey, to mix that with No. 2 puts it all down to No. 2 grade.

For the sake of good prices and fair dealing, brother bee-keepers, do be careful. When I say this I am afraid I am not reaching the very people who ought to read it; but if a man will not take a bee-journal, or, still worse, will not read it when he does take one, he surely ought to take the consequences, and will.

MARKETING COMB HONEY; WHY GOOD HONEY SOMETIMES BRINGS LOW PRICES; INEXCUSABLE IGNORANCE.

THE honey-man, Mr. A. L. Boyden, of our firm, has been having some "experience" of late; and in response to my request he has prepared a statement which producers of comb honey should read carefully.—E. R. R.

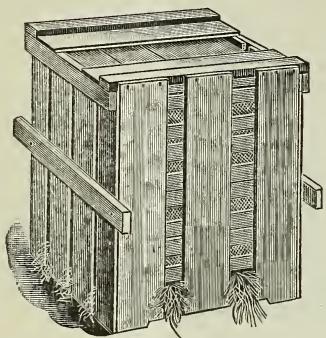
As most of our readers know, we handle large quantities of comb and extracted honey each season. Without thought of going into this as a source of profit, we have for years taken honey, sometimes as a convenience to bee-keepers who had more than they could use in their home markets, and wanted us to handle it for them. Other times we have taken it in exchange for supplies; and during the past few years we have been obliged to buy large quantities to supply the demand of our established trade. Many times we have received complaints from bee-keepers that they have been unfairly dealt with by commission merchants and others to whom they had sent their honey, and we are aware that these complaints are often justly made. It has been our experience, however, that many bee-keepers do not realize the importance of using every means to insure the delivery of their honey to the merchants in a condition that will be creditable to them, and bring for them the best price. For years we have recommended that the cases be packed in crates like those shown below. As a matter of information we publish here the directions we send out to our shippers.

TO SHIPPERS OF HONEY.

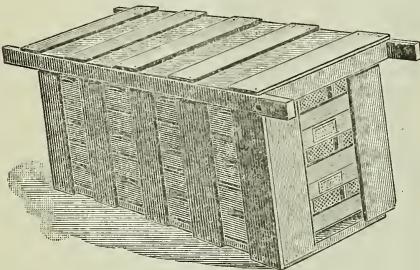
1. Put your name on the *crate*. *No name on cases.*
2. Put a caution card on each crate.
3. Put the gross weight, tare, and net weight on each case before packing honey.
4. Put the total weight of all cases on the upper side of the crate, so this can be found without opening the crate.
5. Mark each case with the grade.
6. Mark each crate with the grade.
7. Put only one grade in a case.
8. Put only one grade in a crate if possible.

Never think of shipping your cases of nice comb honey unprotected, for they are almost sure to go through in a broken or damaged condition. The cases of comb honey should always be crated something as shown below; and in the bottom of the crate,

under the honey, should be a quantity of loose straw, the purpose of which is to act as a cushion. Honey put up in this way can go by freight, and is rarely if ever broken in transit.



Our shipping-cases when sold are put up in the flat in a crate of this description. This crate will hold fifty 24-lb. shipping-cases in the flat, or eight of the same filled with comb honey; or it will hold 100 2-row 12-lb. cases, or 16 of the same when filled with comb honey. In the latter cases, handles are nailed on the sides to insure careful handling. Additional comb-honey crates in the flat, 50 cts. each, or \$4.00 for 10.



This crate holds twelve 3-row 12-lb. cases, and has been used successfully by Geo. E. Hinon and others, without any straw, and, so far as our experience goes, we would not hesitate to ship in this crate without straw. If you use a larger case, however, making a different-sized crate, then we would recommend the straw. The success of this crate we think lies in its shape, and unless you conform to this shape closely we would fear the results would be a lot of broken honey.

Gross Weight	Lbs.	Oz.
Case Weighs	Lbs.	Oz.
Honey Weighs	Lbs.	Oz.

CAUTION CARDS.

These cards are 5x7 inches, to tack on crates of comb honey, cautioning against rough handling. Printed in red ink.

When these rules are followed we seldom have a shipment reach us in bad order, and we think it will pay bee-keepers everywhere, when shipping their honey in less than carload lots, to put it up as described above. We have just received two large lots which have been sent us without crates.

There is something like 3000 lbs. in each lot, and there is not a case in either lot that is not badly soiled by dripping honey. The honey is well filled out in sections, and a caution card is on each case; but in spite of this, enough honey has been broken to make a very sticky mess of it. Another party sent us some put up in crates as we requested, and has used covers on his cases made of two pieces not tongued and grooved or shiplapped, consequently there is a little crack in the cover where the two boards meet, and the honey is badly soiled by dirt sifting in through these cracks. This might have been avoided by using paper, which we recommend, even though his covers were not exactly suitable.

In another respect bee-keepers fail because they omit the marking of the cases with the gross weight, weight of the cases, and net weight. If the little labels which are had for this purpose are not convenient it is much better to mark the cases with pencil than to omit it. Otherwise the dealer must weigh up every case separately, entailing a vast amount of work. In another lot we have just received, billed to us as "fancy honey," we find unmistakable signs of the bee-moth; and on examination we find quite a number of cases in bad order from the work of these pests.

It seems to us if bee-keepers would use more care in putting up their honey they would earn just the difference between a high and a low price on their honey. We can not see why they will allow it to be sold for less than it is worth, simply because they have neglected two of the most important points—grading and shipping.

We have also to call the attention of our readers to the great difference in price received by bee-keepers for the honey produced in the same locality. During the past month we have paid from 13½ to 15½ cents for No. 1 and fancy white honey. At one time we were entirely out, and could have used several tons at the latter figure had we known exactly where to get it without delay. Since then we have been informed that bee-keepers in Western New York have in a number of instances sold the same grades, and equally good honey, at 11 cts. per pound, or at least 25 per cent less than its real value at the time they made their sale. Bee-keepers who take a bee-journal, and know the value of their crop, do not lose in this way, and it would be to their interest to induce their neighbors to take such a journal, so that their market may not be demoralized by sales being made at such figures. Not many years ago, good honey was selling at 10 to 11 cts. per pound, and very likely bee-keepers who sell at 11 cts. now think that they are getting a good price simply because it is as much as was received in previous years.

We heartily wish all of our readers would give their best attention to the grading and shipping of their honey, and help the industry by getting other bee-keepers to post themselves on the market price of honey.



In all thy ways acknowledge him, and he shall direct thy paths.—PROV. 3:6

Yesterday afternoon I gave the children at a Sunday-school convention a talk on "paths and path-making," using the above for my text. For a week or more I have been getting much happiness in repeating the text over. No matter how many times I repeat it, each time it comes over me like a strain of sweet music. I have in times past told you of how my life is made joyous by texts of Scripture that come to me suddenly with a new light and a new meaning. It was so with this one. While thinking about my subject of path-making, and the number of beautiful texts containing the word *path*, this one suddenly occurred to me, and I began wondering if it was not one I had already used. We have no concordance of any kind in our humble home out here in the woods, and I began to wonder if we could find where it was in our little Bible. Mrs. Root said she thought it was in Proverbs, and in less than a minute I had it. It seemed to burst on me like a volume of sunshine, all at once. What a glorious promise it contains for all who are, day by day, all through their lives, striving to "acknowledge him" in all their daily acts and ways! How often do we say, "If I only knew what to do!" or, better still, "If I only knew what God would have me do in the matter!" and here is the promise, that, while we are acknowledging him, he *will* direct our paths for us.

Sometimes it is a little hard to stop our busy work long enough, or, if you choose, to *interrupt* our busy work, to acknowledge him. A man was plowing for me, breaking up ground in the woods. It was trying work for both man and team, and he commenced to swear. I hesitated a little about hindering him long enough to remonstrate; and, in fact, I feared, tired and heated up as he was (for it was near dinner-time), he might swear worse. Well, the result was one of my "happy surprises." He stopped, looked a little foolish, and then began to laugh. He said his wife would be "awful glad" if I could cure him of swearing, and finally admitted he would be glad too. He said he got "into it" among the lumbermen, and he had tried hard many times to break off. I stopped him several times when he forgot, for a few days, and it is now months since I have heard him swear at all. Later on I learned he told some of his friends how I had helped him to get over and away from his bad habit.

Now, friends, this kind of work is "acknowledging him" before men. It is letting everybody know, *especially* when you are among strangers, that you belong to Christ Jesus, heart and soul. Of course you know I mean a *reasonable* and *consis-*

tent acknowledging. If a man engages to work for you, and may be *with* you for some little time, it is your duty—nay, your *privilege*—to try to do him good.

Well, God promises to "direct" the "paths" of all who are in this way "showing their colors" for him and his work. Is it not a glorious promise? and is it not a glorious *privilege* to feel that the great Father above is *directing* and *guiding* us?

Now, I often feel it is a strange thing that I have felt called to come away off here in this out-of-the-way place and start a little humble home. I have wondered at it myself, and I have often prayed over it. I have asked God to indicate to me plainly if it was his *will* and his *call*, instead of only one of my many hobbies, and only a craze for something new and different. When I urged Mrs. Root to come with me and share this "cabin in the woods" she felt sure she would be homesick; and when I was absent on my wheelrides, etc., she felt sure she "couldn't stand it." This seemed reasonable, and I confess I feared it would only prove a blunder and a loss of time and money. Now for the result.

We came here for three or four weeks; but she enjoyed this new life in the woods so much she proposed extending it to *eight* weeks or more. When I was away last evening (at the convention) she was alone, far from neighbors, during a pretty severe storm, after night; but she wrote home to the children, explaining the situation, but added she was well and *happy*, and not the least bit homesick. *Why* (do you ask?) does God want us off here? Well, I don't know exactly just yet, but I think I can now see pretty clearly *one reason*. By this experience I am learning more about the *homes* of the average country people than I ever could have learned otherwise. Perhaps I should say of the *humble* country homes rather than of the average. Let me go into detail a little.

Our home in Ohio is warmed by an apparatus (hot water and exhaust steam from the factory), so automatic that we have nothing to do with fuel. Last night the rainstorm turned to snow, and to-day the ground is white; but we have a new wood-house filled with blocks of dry wood, and we can get to it all through that trapdoor near the stove, which I have told you about. The smallest size of cooking-stove was our first purchase; but we found that expensive in two ways—the wood must be cut up very fine to go into it; and to keep the room warm the stove needed almost constant replenishing. The wood itself costs nothing, and during the winter it is cut into 18-inch blocks, and piled up, for about 50 cents a cord. Well, after we decided to stay until after November we built an annex (8½×10) for the cook-stove and utensils. Then we got a very pretty drum stove (named the "Flirt"), for \$4.50, that will take any of the blocks of wood without splitting; in fact, the opening in the top for fuel is a circle 11 inches across. This stove will make

our whole room, 14×20, nice and warm, and it can be closed up so as to stop instantly, and it holds fire all night or even longer.

Our first stove had the pipe go out through the wall, and then up into the air; and, in fact, most of the houses in our neighborhood have stovepipes sticking out through the roof. But this arrangement was always an "eyesore" to me. I asked the carpenter who built the annex if he could build a chimney. When he admitted that he built the chimneys to his own house I borrowed his team and hauled the brick, and now we have a very pretty chimney that answers for both our stoves, and yet it cost less than \$5.00; the brick cost only \$1.50, and brick is very expensive here. Every home, no matter how humble, should have one of these fuel-saving air-tight stoves. Get one to take big knotty blocks, so as to save the expense of splitting. Our stove will take a cut from a log 10 inches in diameter and 2 feet long. Such a block of hard wood will keep fire 24 hours.

We soon learned that, to keep the house warm, every thing must be tight and snug *under* the floor. This we managed with rough boards covered with shingles, putting building-paper between the boards and shingles, using this in place of a wall, so no wind could possibly ever get under the floor. Our little "annex" has building-paper all over under the floor and under the shingles on the roof. The result is, we can go into it to take a bath, and not feel the least bit of a draft of air through any crevice or crack. For a bath-tub we use one of the largest-sized galvanized tubs, costing only 70 cents. During a short dry spell we ran out of rain water, and Mrs. Root then put in strong for a cistern. There are very few cisterns in this neighborhood. They depend on tubs and barrels; and when there is a dry spell they get along with hard water. Very few of the springs or wells are really soft water. Every home—yes, every *individual*—should have plenty of soft water the year round. The shower bath with cold spring water, such as I have described, for warm weather, may be taken with hard water.

Before I forget it let me say, use building-paper for every thing you build (unless it be "the corn-crib"), for it costs less a cent a square yard, and it keeps off drafts of air that might cause much sickness (if not death) to some loved one.

TWO AND A HALF MILES FROM THE POST-OFFICE.

We have had another experience out here in the woods. People who have all their lives been in the habit of having mail brought to their places of business three or four times a day can hardly imagine the inconvenience of having to go two or three miles to the postoffice. We have got along very well by getting the schoolmaster to give our mail to the children coming our way through the woods (we give them a nickel each trip); but when it is very bad

weather, and on Saturdays, the children do not go to school. I have also had glimpses of the way our neighbors manage. During busy seasons the mail is often left almost a week. At other times journey after journey of several miles is made for an important letter that doesn't come. You see Mrs. Root and I are now ready to discuss understandingly "free delivery of mails in country places" that is so much talked-about. We take a daily Cleveland paper (*News and Herald*), and we could hardly get along without it; and you may judge with how much interest we read the following in the daily of Nov. 2:

GOOD NEWS FOR THE FARMER.

WITHIN FIVE YEARS EVERY RUSTIC IN THE COUNTRY WILL HAVE MAIL DELIVERED AT HIS DOOR.

Washington, Nov. 1.—Within five years every farmer in the country will have his mail delivered at his door. Superintendent Machin, of the free-delivery division of the Postoffice Department, made this prediction tonight, and is confident it will be fulfilled.

"At the rate we are extending the system," he said, "it will spread all over the United States in the period mentioned. It will cover an area of one million square miles, and include practically all the inhabited area of the country.

"There will be in operation by Dec. 1 about 6000 rural routes. Of these, 4700 will have been established since July 1, 1900. During the fiscal year ending June 30, 1901, 13,000 routes were put in operation. There are now on file 6000 applications for new routes, and they are coming in by the hundreds. It will take us from a year to a year and a half to dispose of those already on hand. The people living in the country are widely enthusiastic for this service, and we are supplying it as fast as our appropriation permits."

It is Superintendent Machin's aim to apportion the routes among the Congressional districts as uniformly as possible. Congress will be asked to make a largely increased appropriation for this service at its next session.

Our nearest country store is where the postoffice is kept, and we have had some new experiences in finding ourselves all at once out of soap, matches, coal oil, sugar, and even flour. I can now see a very good reason why land may be very cheap in remote places compared with that near towns and cities. I can also see, I think, how it is that poor hard-working people waste so much valuable time, even a busy season, in going to the "store and postoffice." By free delivery of the mail Uncle Samuel says to these folks, "You keep right on with your work. When there is any mail for you I will bring it right to your door." In the matter of groceries, both *time* and *money* are saved in getting enough to last.

"In all thy ways acknowledge him, and he shall direct thy paths." The great Father not only directs the "paths" of his followers when they go through the woods to the postoffice, but it is on account of the fact that we are as a people a *Christian nation* that he is just now directing our government in this matter of free delivery of mails to both *rich* and *poor*. I believe God was directing *my* path when he gave me this longing for a life in the woods; and I verily believe that the experience of the two months that are now almost ended will help me, all the rest of my life, to feel more than I ever did before that I know at least *something* of the trials and difficulties that

beset great masses of the hard-working people. May God be praised that it is my privilege, even in advancing years, to be one of them, outdoors, under his clear skies, and in his woods, claiming the promise he has given, to direct my paths.



POTATOES IN LEELANAW CO., MICHIGAN;
TESTING DIFFERENT VARIETIES.

Some time in May I sent friend Hilbert a barrel of assorted potatoes, of our best varieties, to be tested on his farm. Along in July I found we had about a barrel of Red Triumphs that we had no room for. They had been spread out in the light on the barn floor for nearly two months, and were a wilted, dried-up, sorry-looking lot. I shipped these also to him, telling him he might get from them enough for seed next year. They were so poor his boys threw out a large part of them as "no good" at all; but when Mr. Hilbert saw them, remembering what I had said, and perhaps also from some of his own experience, he had the "poor trash" planted also. They were put on new ground, and had very little care, or cultivation of any sort; in fact, they were put in so late no one thought they would amount to much. Let me say here, that, during the past season in Medina, we have had so much trouble with blight on the Triumphs I had about decided not to plant any more here. About four years ago they gave good yields with but very little blight; but since then it has been worse and worse every year. In Medina they don't stand hot dry weather at all. Well, here at Mr. Hilbert's there was very little or no blight at all, and the poor dried-up wilted seed gave the handsomest smooth, round, red potatoes I ever saw; in fact, they looked more like beautiful fruit than like potatoes. They are exactly like the Bermuda Triumphs; and, in fact, this soil is about as soft and yielding as that in Bermuda. No wonder the potatoes are of such nice shape, for there are no lumps of dirt or any thing else to hinder them from taking shape just as the apples and cherries do right out in the air. The yield was very fair, considering.

Now, I have a small test-plot of potatoes in my ravine garden, and a dozen hills of Triumphs there gave a beautiful yield—no blight, and some of the potatoes are as big as a goose egg. Of course, we can not, so far north, grow potatoes for the early city markets; but we can grow Triumphs and other extra-early potatoes for seed for all the rest of the world. Some one may suggest that, after potatoes have been grown so many years on the same ground, we shall have blight here, perhaps, as badly as we now have it in Medina, O., and other places.

Early Ohio does hardly as well here as in Medina, and it seems of late to be rather strongly disposed to blight everywhere, but not nearly as badly as is the Triumph.

Bovee has been a fair success here, both on Mr. Hilbert's test-ground and in the ravine garden. In fact, it yields equal to some of the best late potatoes, and is almost as early as the Early Ohio. As with the Freeman, there are a good many small ones, but the shape is not as good as the Freeman. The latter has given a fine yield on this soil—in fact, about as well as it used to do for Terry. It is not only ahead of every thing else in quality, but it is the smoothest and best-shaped of all the potatoes. The eyes on good specimens grown in this soil are almost exactly on a level.

Maule's Commercial gives a very good yield. The potatoes are all large (almost none so small as to be called seconds), and the shape is very much better than in Medina. Carman No. 3 is beautiful in shape, all good table size, and the yield is the largest of any of the five kinds I sent for trial. I was not disappointed in this, for I expected it to show quite a little improvement over the Rural that is so common through this region. It is so much like the Rural it will doubtless be sold as such. The Carman (and I think the Rural also) has the very valuable trait of giving a very even stand. There are almost no missing hills where the planting is carefully done.

The New Craig was the greatest disappointment of all. In the ravine garden, with its rich "woods dirt," the accumulation of decaying vegetation of no one knows how long, I expected something wonderful of the Craig, and, in fact, there was a great show of tops. I could find hills where I could raise up the vines and twine them about my neck; but after they were killed by the frost, about Oct. 20, to my great surprise we had only a lot of rather small immature potatoes. It was the same at friend Hilbert's. He said he wanted no more of the Craig. Now just contrast the above with the following letter I just received from Medina:

Dear Mr. Root:—We got 200 bushels of Craigs in the swamp, and they were fine. I wish you could have seen them roll out. They lay thick in the rows. We got 95 bushels of Craigs by the windmill, and they were nice ones too—very few scabby. We got 20 bushels of Craigs across the creek, about 155 bushels of Sir Walter by the windmill. They were of good size but not quite so smooth as the Craigs. We dug about 20 bushels of Russets, but they were not very nice in shape. Most of them were prongy, and not very big.

We got about 20 bushels of Whitton's white Main-moth. They were all fair potatoes, and good yield. Medina, Oct. 21.

FRANK RITTER.

The swamp mentioned in the fore part of the letter is a little less than one acre; and for this poor season, when almost all potatoes are pretty nearly a failure, the Craig on our Medina clay soil has scored away ahead. Another thing, they are clean, and free from scab and blight, on upland, when almost every other kind is more or less affected. We always get a big yield of nice clean Craigs on any of our Medina ground; but up here in this great potato region they

are "no good." I wonder if it can be that the season here is not long enough for the Craig. In both tests the potatoes looked as if they were only half grown, yet both were planted near the first of May. I think I will try again next year, planting them in April, or just as soon as they *can* be planted.

Now for the Russet. Frank says the yield was small, and the potatoes were "prongy," in Medina. I think this was due largely to severe drouth that almost stopped their growth, but that they afterward started a new growth with our abundant rains in August. Well, there was something of the same conditions here; but, listen to my story.

A few days ago my help was all missing. I soon found the farmers were getting anxious about their potatoes, and were offering 4 cts. a bushel for digging and picking up. One of the boys whom I had been hiring for \$1.00 a day was making \$2.00 in the potato-field. Another boy, only 14 years old, was sure he could do the same (dig and pick up 50 bushels a day), and he did it. Then came a report that Holly Hilbert, aged 19, and his sister Erna, aged 15, had (the two together) dug and picked up 125 bushels in a day. Mr. Hilbert sent word I must come over at once and bring my kodak. Let me go back a little.

Last fall I sent friend Hilbert a copy of the book entitled "Farming with Green Manures,"* and he has become quite taken up with it. Some time in the fall he plowed under a fine field of clover, and sowed rye. This spring, just after the rye was out of bloom, he turned it under and planted Russet potatoes. His neighbors thought it a great waste; but to-day he has been getting *three hundred bushels per acre*, during this poor season, of the handsomest Russets any one ever saw. The potatoes are all large or very large, and they are almost as handsome and smooth as the Carmans, only of different shape. It was these beautiful Russets that Miss Erna and Holly got out 125 bushels of in a day. Their mother told me they did not commence till after 7, and they stopped at night before 6 o'clock.

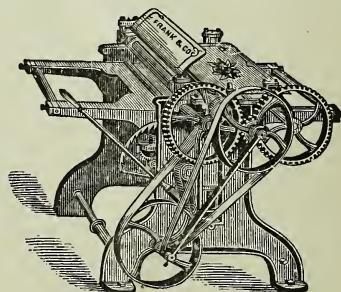
I noticed Holly pulled out his potatoes with a light hook, such as is in general use about here; but he told me he preferred a fork, as a rule; but on this crop the rye straw, that was not fully decayed, interfered with the fork more than it did with the hook. Both forks and hooks are made much lighter for use in this locality than in Ohio.

I find, by conversing with experts, that there is a difference of opinion as to which is best. Holly says he could have dug 150 bushels or more, had he been able to use the fork. I find, in the country about here, that most of the schools have a vacation during potato-digging time. Buyers are now offering about 50 cts. per bushel. Perhaps I might here mention that the Russet

is about the whitest, inside, of any potato known, and it now commands as high a price as any other potato in the market. A scabby Russet is something I have never seen in this locality, although they have had trouble with scab with almost all other kinds—that is, when potatoes have been grown on the same ground year after year. My kodak pictures of the potatoes and the Hilbert family I expect to show you in due time.

Potatoes are kept over winter right in the field where they are dug, all over this region. Just dig an oblong pit, say from 3 to 6 feet across, 2 or 3 feet deep, and have the top of the potatoes about level with the surface of the ground. Put on an armful of straw, then a foot or two of dirt; and if you are in a depression where the snow will drift over the heap, and not blow off, your potatoes are safe. Scattering the potatoes over the heap will help to keep the snow from blowing off. If your pit is in the sand, say in soil sandy enough to dig easily, there is never any need of making any provision for drainage.

Since the above was written Mr. Hilbert tells me he dug a square rod, carefully measured, and it showed at the rate of 354 bushels to the acre. Mr. Martin Olsen, of Keswick (the carpenter who built our "cabin"), has also succeeded in getting this season 300 bushels of Empire State potatoes to the acre on a part of one of his fields. On the same field he has, on former seasons, taken 200 bushels of corn from an acre, and this is not considered a corn country. Now, both Mr. Olsen and Mr. Hilbert are "high-pressure" farmers. I might tell you of seven acres of potatoes near here that gave only a little over 100 bushels all together.



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The above cut shows one of our small Planers, of which we make twelve different styles and sizes. Also large Planers, Band Saws, Buzz Planers, Moulders, Wood Lathes, and all kinds of

WOOD WORKING MACHINERY

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The FRANK MACHINERY CO.
BUFFALO, N. Y.

* This is the book that Alice, when she hastily read the title, called "Farmers with Green Manners." Never mind. Alice picked up 97 bushels the same day her sister did 125, and Alice is only 12 years old.

GET MORE HEN MONEY

Feed cut raw bone and double your profits; get more eggs, more fertile eggs;

more vigorous and healthy fowls.

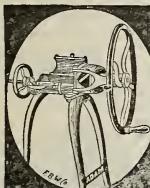
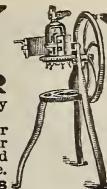
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New design, open hopper, enlarged table, new device to control feed; you can set it to suit any strength; never clogs. Sent on

10 DAYS FREE TRIAL. No money asked for until you prove our

New Model will cut any kind of bone, with all adhering meat and gristle, faster and easier and in better shape than any other type of bone cutter. If you don't like it send it back at our expense. Free cat'g. explains all.

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IT WILL PAY YOU

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It tells how to increase the egg yield. The Dandy, the easiest turning of all bone cutters, is sold

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1 2 3 4 5 6

Count the Chicks

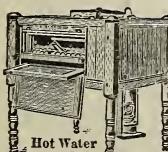
as they come out. Then count the eggs, and you will see why so many people are using

Successful

Incubators and Brooders.

The healthy egg becomes the vigorous, husky, money-making hen. You will want our beautifully illustrated catalogue. Five different editions in five languages. English edition 4 cents; others free. It is a poultry Bible.

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Satisfied People.

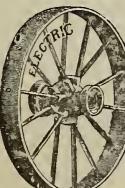
That's the kind that: in the

MARILLA

Incubators and Brooders.

If they are not satisfied we refund their money. Larger hatches, perfect system of regulating temperature, moisture and ventilation on. All these points explained in our catalog. Send for two 2c stamps.

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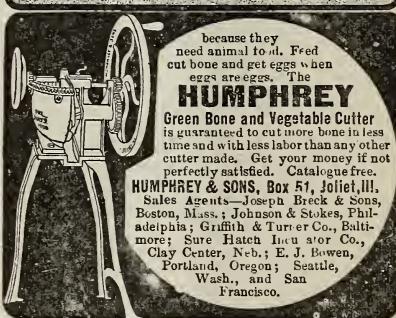
A Good Wagon

begins with good wheels. Unless the wheels are good the wagon is a failure. IF YOU BUY THE ELECTRIC STEEL WHEEL made to fit any wagon—your wagon will always have good wheels. Can't dry out or rot. No loose tires. Any height, any width tire. Catalog free

ELECTRIC WHEEL CO., QUINCY, ILL.

To make cows pay, use Sharples Cream Separators. Book "Business Dairying" & cat. 288 free. W. Chester, Pa.

HENS EAT BUGS.

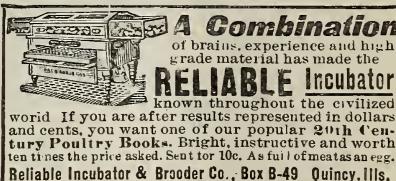


because they need animal food. Feed cut bone and get eggs when eggs are eggs. The HUMPHREY

Green Bone and Vegetable Cutter is guaranteed to cut more bone in less time and with less labor than any other cutter made. Get your money if not perfectly satisfied. Catalogue free.

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Sales Agents—Joseph Brock & Sons, Boston, Mass.; Johnson & Stokes, Philadelphia; Griffith & Turner Co., Baltimore; Sure Hatch Incubator Co., Clay Center, Neb.; E. J. Bowen, Portland, Oregon; Seattle, Wash., and San Francisco.



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of brains, experience and high grade material has made the

RELIABLE Incubator

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200-Egg Incubator for \$12.80

Perfect in construction and action. Hatches every fertile egg. Write for catalogue to-day.

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produces 25 to 50% more net power from any kind of wind than any other mill, i.e., Wheel turns only 1 1/2 times for the wind like a tree and is 400% more storm proof than any other. Extraordinarily light, but wonderfully strong. Very sensitive—runs in lightest winds. Numerous sizes—6 ft. up, both pumping and power, back gear or direct stroke. Send for circulars and

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1200 FERRETS.

All sizes; some trained; first-class stock. New price list free. N. A. KNAPP, Rochester, Lorain Co., Ohio.



OUR NEW POTATO BOOK—A CORRECTION.

On page 877, Nov. 1, the price of Terry's A B C of Potato Culture is given as 35 cts. That applies to the old edition. On account of a considerable increase in the size of the 1901 edition we are compelled to put the price of the new edition at 45 cts., paper; by mail, 50. Bound in cloth, 68 cts.; mail, 7.

BUSINESS OUTLOOK.

The prospects for the coming year's business are quite promising from present indications and reports from various fields. We are booking orders earlier this year than has been customary in the past. We have the work on the revision of our catalog well advanced, and hope to have them ready to mail some time next month. There are practically no changes in price to note, other than those already mentioned in this column. Make up your orders early, and take advantage of leisure time in winter to get your supplies all ready for the bees when the spring rush comes.

HONEY MARKET.

A carload of comb honey from the West had just arrived as we were going to press with the last issue. We have since shipped several tons out of this car. It is packed in single-tier cases of 24 sections each, with a wood slide in the place of glass. The honey is very thick and of heavy body, and sections well scraped. In lots of 10 cases and upward we are selling fancy at 16, and No. 1 at 15 cents. We have also a good stock of eastern comb honey of various grades. Inquiries solicited from those wanting honey, either comb or extracted. We are having a good trade in the latter, and solicit offers of amber, with samples. State how put up, and price asked. We have a good supply of clover and basswood and white sage; have also several lots of buckwheat. We need some of an intermediate grade.

SEED POTATOES FOR 1902.

On page 656, Aug. 1, I gave prices on seed potatoes for planting in 1902 as follows: $\frac{1}{2}$ peck, 35 cts.; peck, 50 cts.; $\frac{1}{2}$ bushel, 85 cts.; bushel, \$1.00; barrel, \$4.00. Small seconds, half the above prices. I have been watching quotations since then, and no reliable seedsman has made any better prices. Our potatoes are now all dug and safely stored away; but we will ship them the remainder of this month at our risk against frost, at the above figures; or we will keep them safely for you till next spring in our specially arranged potato-cellars. We can furnish, at the above prices, White Bliss, Triumph, Early Ohio, Bovee, Sir Walter Raleigh, New Russet, and Craig. As our supply of many is limited, you had better order at once if you want them. Seed potatoes, especially the earlies and extra earlies, are likely to be away up before another spring. Our seconds will probably all be gone very soon at the above low figures.

CONVENTION NOTICE.

The Minnesota Bee-keepers' Association meets in Plymouth Church, corner Eighth St. and Nicollet Ave., Minneapolis, Wednesday and Thursday, Dec. 4, 5, 1901. W. Z. Hutchinson, Flint, Mich., will give a stereopticon lecture on Wednesday evening, and a good program is prepared and now in the hands of the printer. Joining the National Bee-keepers' Association in a body will be voted on Wednesday. All bee-keepers are invited. H. G. ACKLIN, Chairman Ex. Com.

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Manufacturers of
Bee-hives. Sections. Shipping-cases. and
Everything Used by Bee-keepers.

Orders filled promptly. We have the best shipping facilities in the world. You will save money by sending for our price list. Address

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Standard - Bred Queens!

Acme of Perfection; Not a Hybrid among Them.

Improved Strain Golden Italians.

World-wide reputation; 75c each; six for \$4.00.

Long-tongued 3-banded Italians.

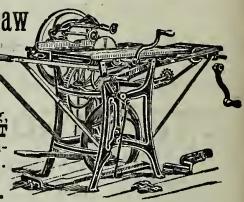
Bred from stock whose tongues measured 25-hundredths inch. These are the red-clover hustlers of America; 75 cts. each; six for \$4.00. Safe arrival guaranteed: Catalog on application. Headquarters for bee-keepers' supplies.

Fred W. Muth & Co., Cincinnati, Ohio.
South-west Corner Front and Walnut Streets.

Union Combination Saw

For Ripping, Cross-cutting, Rabbing, Mitering, Grooving, Gaining, Boring, Scrollsawing, Edge-moulding, Beading. Full line **FOOT** and **HAND POWER** machinery. Send for catalog A.

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Honey and Beeswax.

Liberal Advances made on Consignments. Wholesale Dealers and Commission Merchants Estab. 1875.

Wanted! HONEY, WAX,
MAPLE SUGAR,
SYRUP, AND
POPCORN.

A. L. JENKS, 42 W. Market St., Buffalo, N. Y.

We will be in the market for honey the coming season in carloads and less than carloads and would be glad to hear from producers everywhere what they will have to offer. **SEAVEY & FLARSHEIM,**
1318-1324 Union Avenue, Kansas City, Mo.

WANTED. Comb honey in any quantity. Please advise what you have to offer. **EVANS & TURNER,**
Town St., Cor. 4th, Columbus, Ohio.

WANTED.—Fancy and No. 1 white-clover honey, one-pound sections, paper cartons preferred. **BLAKE, SCOTT & LEE,**
33 Commercial St., Boston, Mass.

WANTED—Comb honey and beeswax. State price delivered Cincinnati. **C. H. W. WEBER,**
2146 2148 Central Ave., Cincinnati, Ohio.

FOR SALE—Extracted honey, cans and kegs, 7 to 8 cts. per lb. Sample, 5 cts. Comb honey, 13 to 14 cts. Beeswax wanted. **I. J. STRINGHAM,** 105 Park Place, New York.

FOR SALE—4000 lbs. light amber extracted honey at 5c per lb. **W. C. GATHRIGHT,** Las Cruces, N. M.

FOR SALE—Extracted white clover and basswood honey in 30-lb cans, two in a case, at $7\frac{1}{2}$ cts. Honey is well-ripened, and O. K. Sample for stamp. Order soon, as this offer will not last long. Reference, Wilton Bank. **EDW. WILKINSON,** Wilton, Wis.

FOR SALE—30 to 35 cases heartsease honey, two cans to a case (120 lbs.); new cans; 7 cts. per pound. **JOHN A. THORNTON,** Lima, Ills.

FOR SALE—Two cans comb and extracted alfalfa clover honey. **VOGELER SEED & PRODUCE CO.,**
Salt Lake City, Utah.